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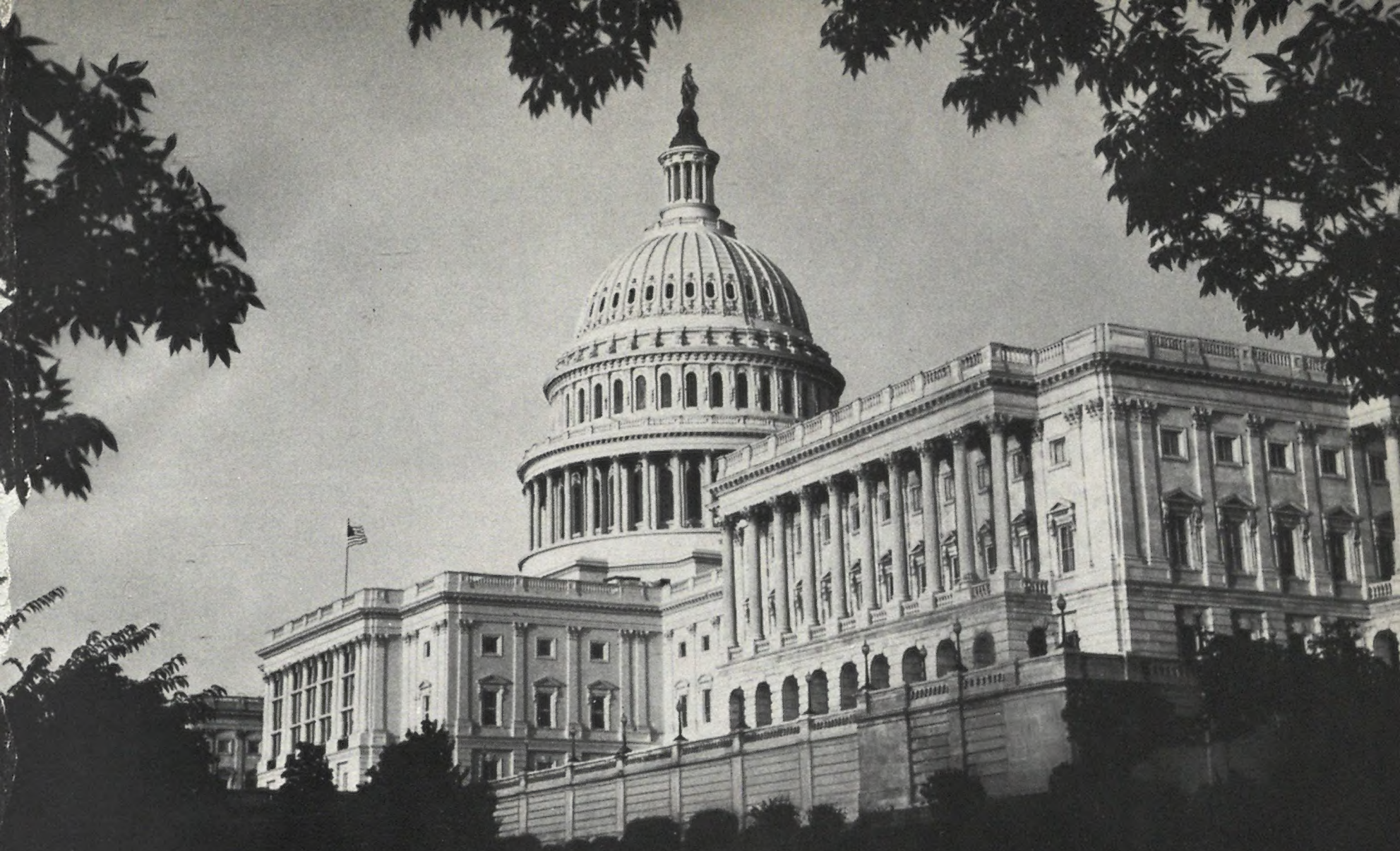

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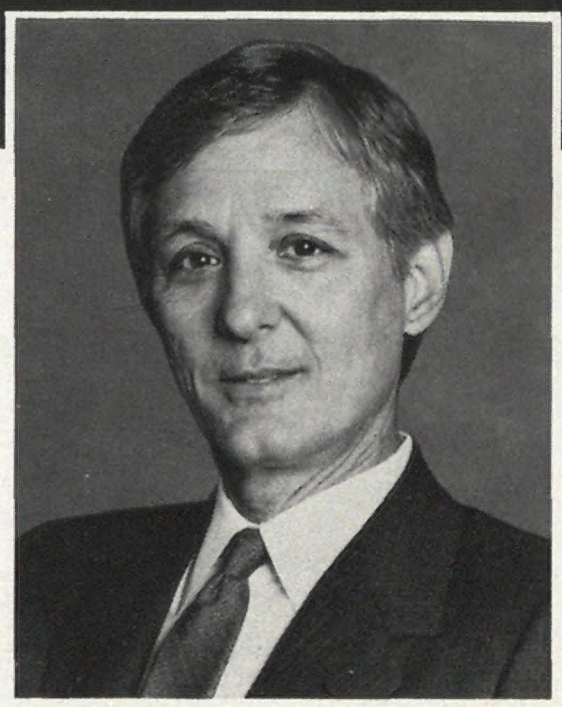

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Smithsonian

Volume 19, Number 1

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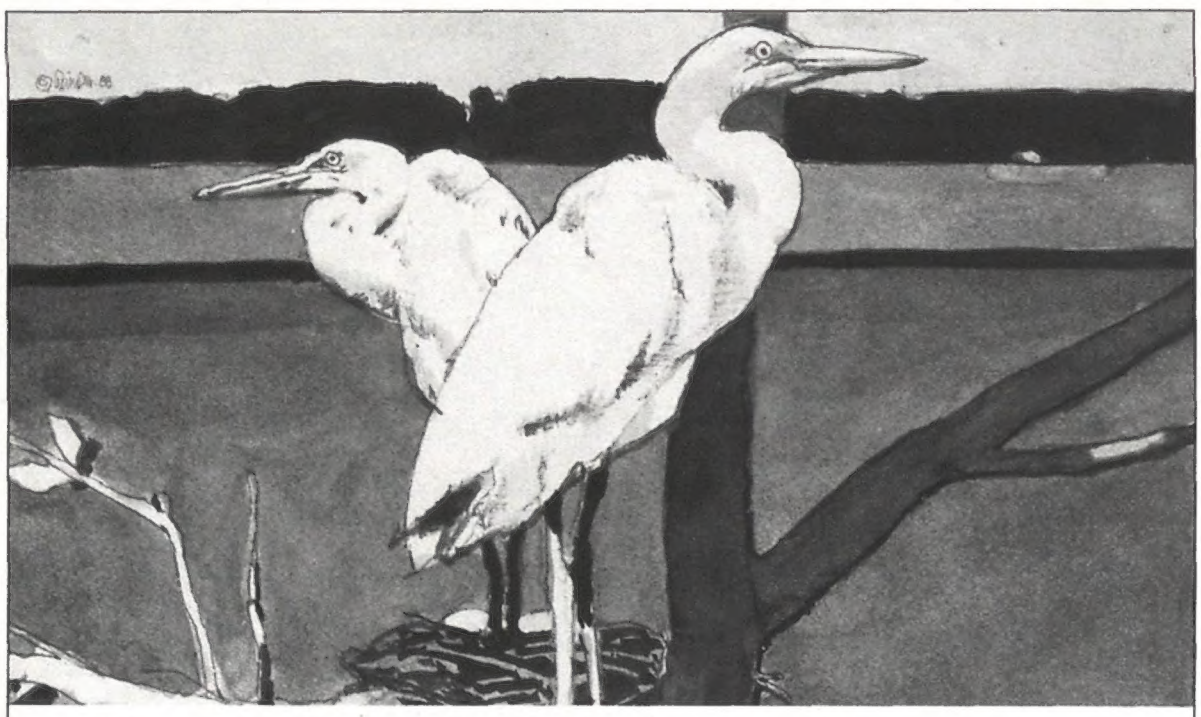

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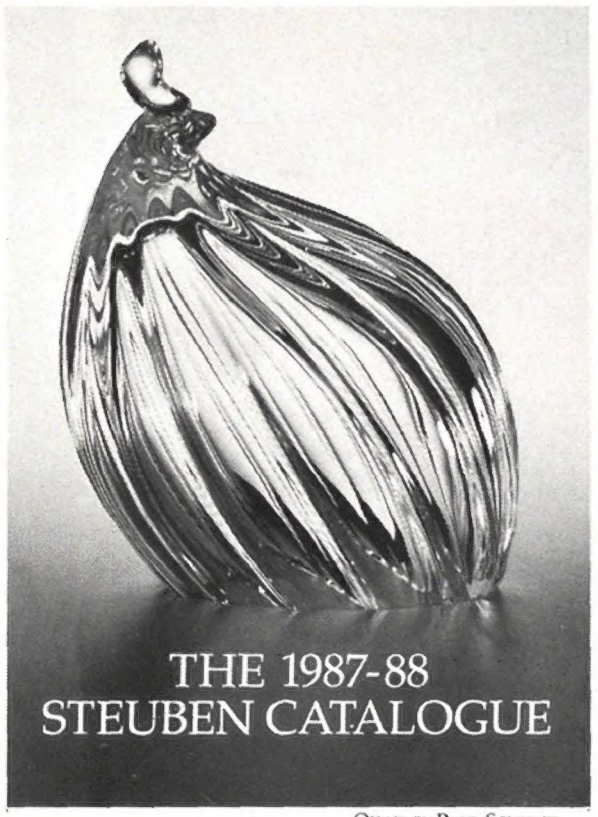

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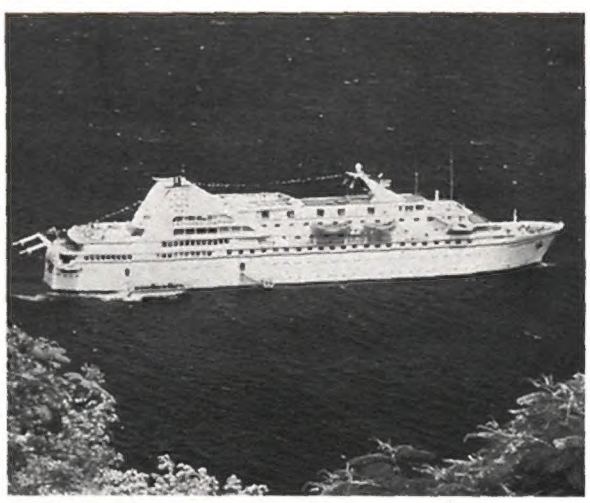

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Secretary Adams' comments

Smithsonian horizons

From hand-raising young animals to star and planet research, the help of volunteers is vital to the Smithsonian

Casting a uniquely perceptive eye on the United States more than a century and a half ago, Alexis de Tocqueville noted our propensity to join in voluntary associations for ends almost too numerous to describe. The attainment of equality and the art of associating together must be linked, he wrote in *Democracy in America*, "if men are to remain civilized or to become so." His dictum may help in understanding how the Smithsonian exists at all, for the degree of our dependence on more than 5,000 volunteers cannot be overstated.

A majority of these volunteers, manning information desks and serving as docents, take responsibility for bringing every facet of the Smithsonian before the public. To most of our visitors, they constitute the Institution's human face. But theirs is a story for a different occasion. Instead, Tocqueville's law leads me to the somewhat smaller number of behind-the-scenes volunteers, and to the iceberg of associations of which they are only the tip with whom we happen to be most directly in contact.

Many come to us with special craft, business or academic skills. Perhaps love and patience should be included, for this distinguishes volunteers at the National Zoo involved in hand-raising young animals rejected by their parents. But more specifically, even the remote and relatively small staff at our Whipple Observatory in Arizona has been able to meet its demands for qualified volunteers to be involved in staffing the visitors' center, constructing electronic instruments and even troubleshooting plumbing systems. One particular group of amateurs has produced nightlong observational data and techniques for computer-aided data reduction.

Some of the outstanding products of amateur telescope makers find their way into the National Museum of American History. Active amateur observers contribute importantly to variable star research, to the identification of minor planets or comets and the calculation of their orbits, and to the search for new celestial phenomena. The occasional sharing of available time on telescopes and computers is testimony to the effectiveness of such cooperation.

Astronomy is not alone. Where there is an indefinitely large mass of data whose recording can contribute to new levels of understanding, associations are likely to form that draw professionals and amateurs into a common enterprise. Local historical groups and their journals are a venerable example. Bird watching is another. The Christmas bird camps, with multitudes of observers counting species within discrete areas, provide a useful and otherwise unattainable picture of yearly or decadelong fluctuations in population. Significant migrations, such as that of the cattle egret (SMITHSONIAN, May 1987), may first come to light in this way.

Garden clubs and botanical societies, too, form a continuum in which preoccupation with breeding leads to a growing understanding of genetic selection.

To speak of a continuum is not to say that professional-amateur relations are always easy. Amateurs tend to be weak on methodology. Key contextual information is often overlooked in their accounts. But they can carry out observations with a simultaneity and scale that professionals seldom achieve. New discoveries or powerful new syntheses, if well explained, can quickly reach wide amateur acceptance. And associations prominently involving amateurs constitute a primary pool of recruitment from which many of the greatest professionals have themselves been drawn.

There is greater tension where amateur collecting jeopardizes limited resources of data. Archaeology is perhaps the clearest case. Passive collectors who buy antiquities are part of a knowing chain, along with dealers and active looters, engaged in despoiling irreplaceable sites for a handful of their most commercially valuable contents. Virtually all information on context, the most vital evidence there is for the development of any sort of scientific understanding of the human past, is thus lost. Other amateurs, however, exchange data with professionals and publish their own findings. If refinements of method and the supplementary information they can reveal are lacking, at least some new data enters the recorded stream of understanding. And the widened networks yield valuable intelligence on who the real outlaws are and how they can be apprehended.

Boundaries tend to assume misleading importance on most maps because they are easy to draw. Less readily defined but at least as enduring and important are centers, confluences and continuities of interest like those above. Linking institutions and associations, professionals and amateurs, they give substance to not only a community of knowledge but a process leading to its advancement.

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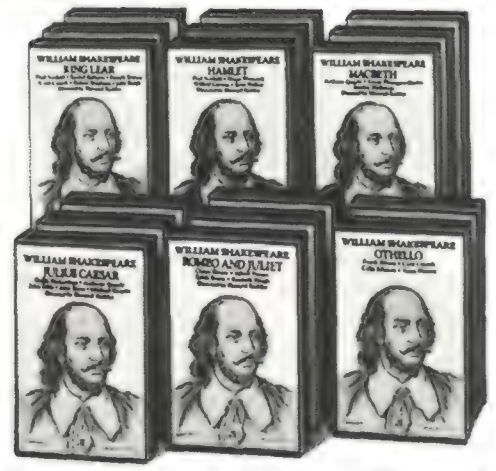

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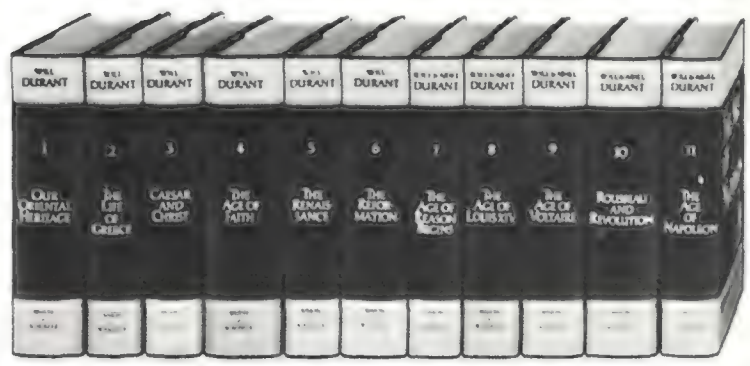
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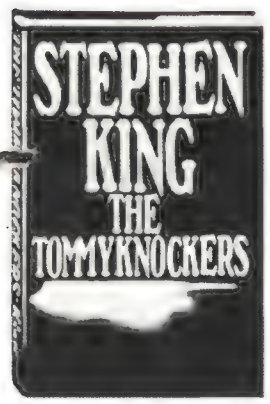

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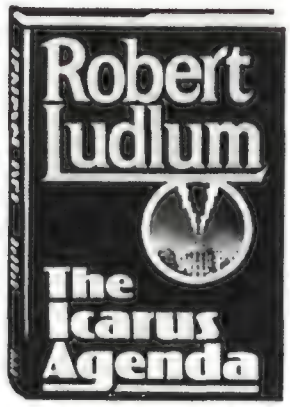

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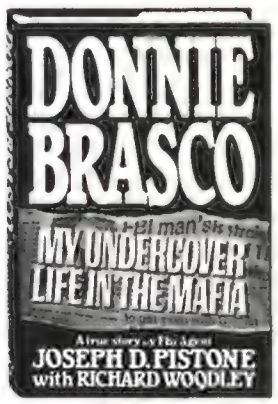

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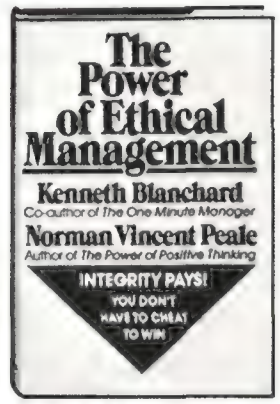
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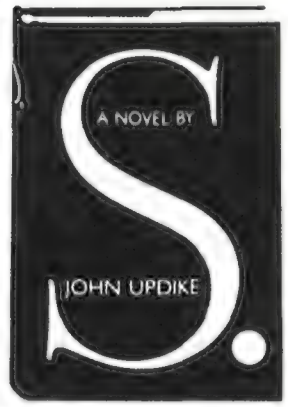

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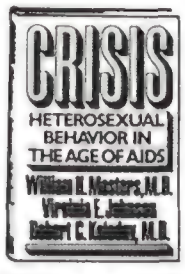

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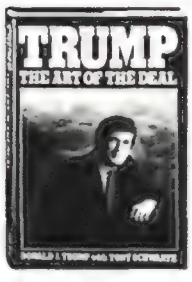

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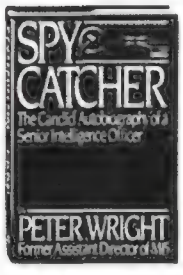

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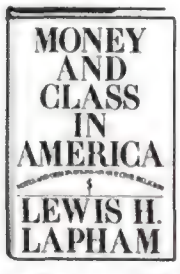

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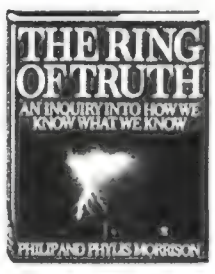

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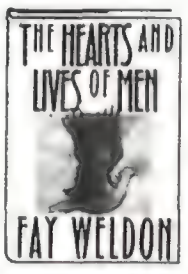

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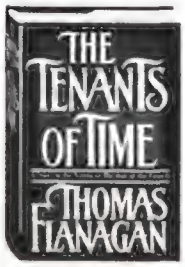

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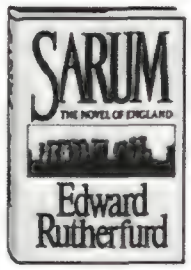

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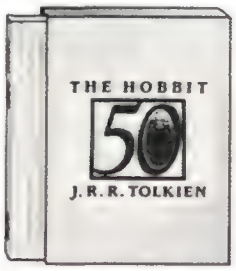

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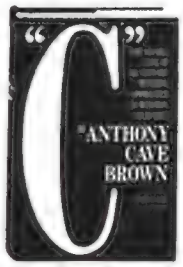

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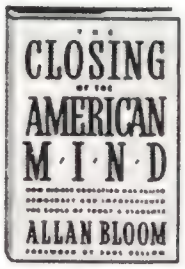

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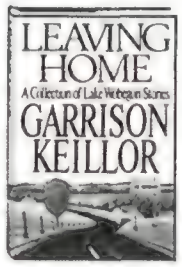

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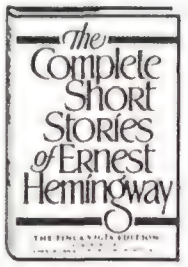

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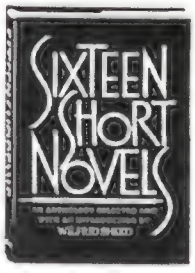

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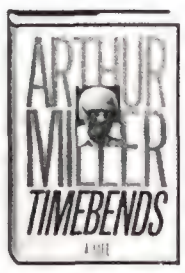

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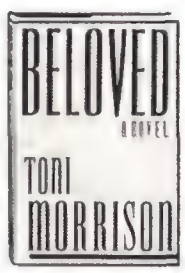

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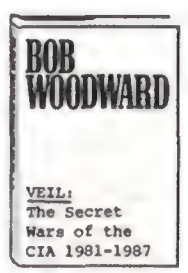

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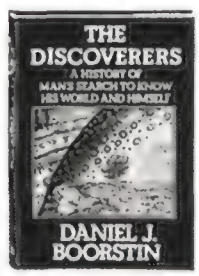

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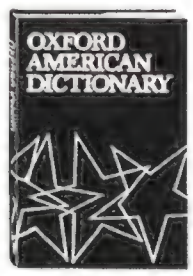

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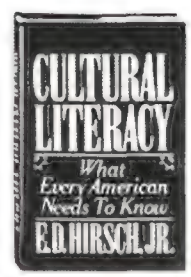

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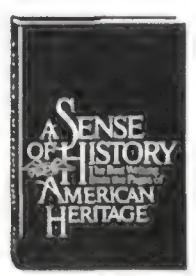

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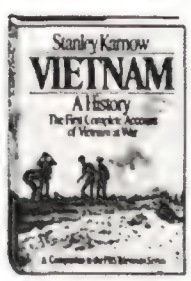

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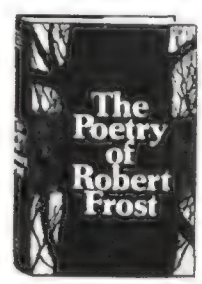

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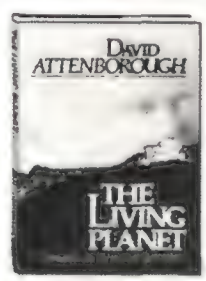
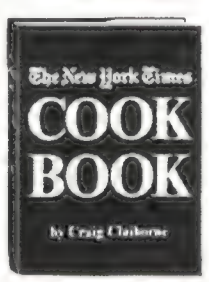


678 Pub. price $25



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Letters to the Editor

Pitcairn Island

Dear Sir: I was mystified by the reference to "Fletcher Christian's Bible" on page 97 in your February issue. According to my grandfather Daniel M. Lord's memoirs, his father, the Rev. Daniel M. Lord, was called to the Seaman's Church in Boston upon graduating from Princeton Theological Seminary in 1833. My great-grandfather was instrumental in establishing a sailors' home next to this church, and every sailor who stayed there was presented with a Bible before leaving on his next voyage.

One of the sailors landed on Pitcairn and met John Adams, then an old man who could hardly see to read the small print of his Bible, which had been taken from the *Bounty*.

Adams asked that the sailor's Bible, which had larger type, be exchanged for the *Bounty* Bible. This was done, and on his return to Boston the sailor gave the *Bounty* Bible to my great-grandfather. I understand from a cousin that it is now in the New York Public Library.

I have no reason to doubt the truth of my grandfather's account, and it is not the sort of yarn a sailor would make up. Were there two Bibles—Christian's and a ship's Bible?

Mary Alice Lord
Brunswick, Georgia

Levi Hayden, mate of the whaling ship Cyrus, *spent some time on Pitcairn in 1839 and became friendly with the islanders. When he left, he took with him two Bibles: he had traded his own to John Adams for one; the second he obtained from Fletcher Christian's widow.*

When he returned to Boston, Hayden gave the Adams Bible to the Rev. Lord, and the Lord family later donated it to the New York Public Library where, in the Rare Book Collection, it is known as the Bounty *Bible.*

Hayden kept the Fletcher Christian Bible, willing it to a cousin, who presented it to the Connecticut Historic Society. There it remained until January 4, 1949. Then, at the request of the islanders, it was turned over to the British Ambassador, taken to England for inspection by King George VI and Queen Elizabeth, rebound by a rare book specialist and finally returned to Pitcairn, where it is today. Ed.

Dear Sir: In December 1943 on my way home from New Zealand, we stopped briefly on Norfolk Island. I ran across a grizzled local, and as we sat under a flowering oak he told me this story:

The island, a British penal colony until 1855, had a salubrious climate, good soil and opportunities for trade and whaling. So the *Bounty*'s 194 descendants were persuaded to leave Pitcairn, where food and water were increasingly scarce, and come to Norfolk in 1856. Conditions were better and the colony prospered, but still 42 homesick souls returned to Pitcairn.

"Are any descendants of those who stayed still here?" I asked.

"My name is Christian," he said.

Jonathan M. Williams, M.D.
Bethesda, Maryland

Dear Sir: Mr. Conrad states that the accused *Bounty* mutineers were tried in London. Actually, the trial took place on board HMS *Duke* at Portsmouth. Three of the mutineers—Ellison, Burkitt and Millward—were hanged on board HMS *Brunswick* in that harbor.

Donald A. Maxton
Elizabeth, New Jersey

Cajun music

Dear Sir: As one who knows and is related to many Creoles from Louisiana, I must say the article gives too much credit to Cajuns for things that also have Creole origins. For instance, gumbo and jambalaya and many other Louisiana favorites have roots in Creole-African traditions. Indeed, the name "gumbo" stems from African words for okra, often a primary ingredient of the dish.

Blair Williams
Los Angeles

Trolleys

Dear Sir: When I was a child in the 1920s, we would drive from Long Beach to a mountain cabin we owned on Mount Baldy in the San Gabriel range. We passed through a small town with a trolley track in the middle of a divided highway; the track ran up a slight incline almost to the base of the mountains. On this single track was a horse- or mule-drawn trolley.

At the top of the grade, the operator unhitched the animal, which then clambered onto a rear platform for a free ride back down to the starting point.

Walter C. Posten
Miami

Dear Sir: More than 20,000 hours of volunteer work [below] has gone into restoring these beautiful pieces of the past for the people of San Jose to enjoy. Financial backing is by private donation, from a penny given by a child coming to see the cars being restored, to major contributors giving as much as $150,000 each. In all, the San Jose Trolley Corporation, which is private and nonprofit, has to date received about $2 million.

Bill Hunter
Sunnyvale, California

Volunteers in San Jose with trolley restorer Fred Bennett (right).

Dear Sir: Trolleys "going quietly down tree-lined streets"? From my Brooklyn boyhood, surrounded by electric traction, I can state the decibel level of a passing trolley compared favorably with a passing tornado plus 10,000 banshees.

The trolley was quiet while in the carbarn or when it suffered a dewire-

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ment on the street. The sudden silence was usually broken by muttered imprecations from the motorman as he walked back to reunite pole with wire.

"Drunken-swaying" and "bone-jarring" were suitable adjectives for the ride. We loved it!

A. Briggs
Danbury, Connecticut

Dear Sir: Columbia Railway Number 20, pages 128-29, a cable car, not a trolley, was one of 20 closed, cable-grip cars built by the John Stephenson Co., New York, for the opening of the Columbia cable operation, March 9, 1895.

LeRoy O. King jr.
Dallas

Mr. King is correct. At turn of the century, Washington, D.C.'s cable cars and trolleys looked remarkably alike. Ed.

Dear Sir: The trolleys! What memories: the many summer Sundays we boarded those open, breezy, friendly trolleys for a day of fun at Steeplechase in Coney Island; my friends, when I was running to catch the trolley to take me to high school, pulling the wheel off the overhead wire, delaying the car long enough for me to get aboard (eventually the conductor, when he saw me running, would wait for me, to avoid having to get out and replace the power wheel); and on one of those trips meeting the man to whom I have been happily married for the past 52 years.

Dorothea Michel Hill
Port Washington, New York

Dear Sir: Leo Daft did build a line in Los Angeles and several other cities but not in San Diego.

George K. Bradley
Birmingham, Michigan

Dear Sir: In the latest James Bond film, *The Living Daylights*, 007 takes a streetcar ride while in Bratislava, Czechoslovakia. In a later scene the trolley helps Bond and his leading lady make an ingenious escape from the KGB.

Donna J. Dalton
Atlanta

Dear Sir: New Orleans, my hometown, once had 52 streetcar lines. Now it has half a line, and people sit in bumper-to-bumper traffic in a city broken up into islands by elevated highways.

I frequently go to Kraków, Poland, to enjoy the pleasures of riding a trolley.

Ralph Slovenko
Detroit

Horizons

Dear Sir: Nothing creates more incentive than recognition, surely deserved by scientists who receive the Nobel and many other prizes. We provide it for TV, movie and sports personalities, who reap substantial financial reward for giving a few minutes' entertainment to a small segment of the public. How much more deserving are those who advance knowledge and provide, for millions today as well as for generations to come, a better life.

Peter R. Jax
Seal Beach, California

Snakes

Dear Sir: Last summer, as we hosted a city child through the Fresh Air Fund, a garter snake appeared in our woodpile.

Geraldo had never seen a snake. Fascinated, he stood just a foot or so away, watching the snake as it warmed in the sunlight. There aren't any snakes in the urban South Bronx. Gerry murmured that he'd like to catch this snake and put it in a bottle to keep. I replied that I'm opposed to caging wild animals. Gerry looked at me, bug-eyed and gasped, "That's a *wild* animal?"

Rhu M. McBee
Brewster, New York

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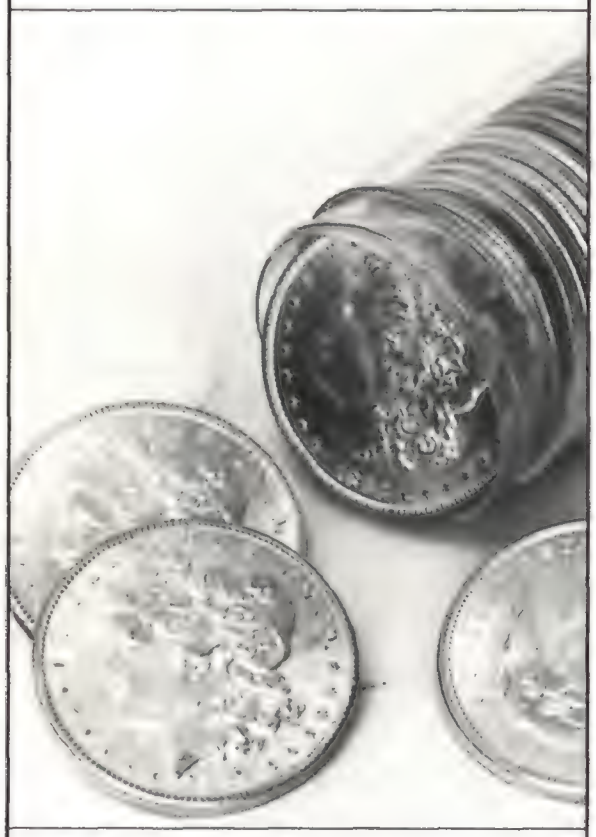

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Around the Mall and beyond

There's a country song echoing somewhere in the ether that laments being in Virginia in the rain. Highly evocative. I remembered it last winter when I was at the National Zoo in the rain. I like to go to the Zoo on a very hot or cold day, or in a snowstorm, because the residents sometimes react in unexpected ways. African wildebeests may play in the snow; Kodiak bears may bask in their pool during a heat wave.

But on this rainy afternoon most of my Zoo friends were reacting sensibly by staying inside (sensibly to me, that is, which I guess makes me guilty of homocentrism, an attitude deplored on page 26 by my friend Mike Robinson, director of the Zoo). There were only three exceptions: a family of antelope near the education center, a pair of American bison who stood, dripping and motionless, as though posing for a dreary landscape of the drenched prairie, and Mike Morgan of the public affairs staff.

He put me in one of those golf carts that the Zoo people use. They have tops but no side curtains, and at every turn, cold water sloshed on our shoulders. We clung to the middle of the seat and dabbed at ourselves with paper towels. It was a relief to reach shelter.

We found it in one of the Zoo's choicest places, the new Invertebrate Exhibit, which occupies the lower level of the Reptile Building. You drive your wet golf cart around and downhill to the rear of this building, and park as near as you can get to the door, beside an abstract wire sculpture of an octopus.

Inside, it's dry—though many large, wet aquariums confront you, displaying anemones, starfish, snails, sea urchins and other invertebrates. We were met by the head of this department, an affable vertebrate named Jaren Horsley. He led us straight to his newest exhibit, a big holding tank containing four giant Japanese spider crabs, the largest crustaceans in the world.

I say "containing," but that's just barely true. These monsters, with legs two to three feet long, were placidly dozing, their great appendages tucked out of one another's way. I was certain, from past experience, that they would remain torpid until I left, and later I would hear the inevitable report that the moment I was out of sight they had exploded into extraordinary activity.

But this time, even as I watched, one crab, perched halfway up an underwater cliff, awoke, stretched, scratched itself and came scrambling downhill to the tank floor, waking up its compatriots as it moved. And so I had a very good look at *Macrocheira kaempferi.*

A good look at a giant spider crab isn't exactly an esthetic treat. When trying to describe one, "homely" is the gentlest word to spring to the lips. The body is a pear-shaped blob. The eight legs are skinny, knobby and fragile-looking, and in an adult can grow to more than four feet long, giving the creatures a span of about nine feet.

Oddly enough, the body doesn't get much bigger than the 12-to-14-inch width of the four crabs to whom I was introduced. A fully grown, nine-foot crab, then, approaches the proportions of a giant daddy longlegs. The animals live in deep water—down to 1,200 feet—off the southern coast of Honshu and westward to the island of Kyushu.

Last December, these four crabs, plus six more, were bundled up, legs neatly tied under them, at the Izu-Mito Sea Paradise Aquarium, southeast of Tokyo. Jaren Horsley, who was in Japan to observe, saw the giants packed in insulated boxes on piles of wet moss that had been kept cool the night before with bags of ice. Then off they flew, the generous and much appreciated gift of friendship from All Nippon Airways (ANA) to the United States.

Jaren and the Zoo's chief veterinarian, Mitchell Bush, reported that nine of the ten crabs took the 16-hour ANA flight in stride (so to speak) and four of them then settled in comfortably here at the Zoo as part of one of the very few displays of their species in this country. Since their permanent quarters were still under construction, the crabs were temporarily placed in a holding tank big

DEWAR'S PROFILE:

HENRY THREADGILL

HOME: Brooklyn, NY

AGE: 43.

PROFESSION: Composer; multi-instrumentalist; inventor of the hubkaphone; leader, Henry Threadgill Sextett.

HOBBY: Swimming. "It's the best way I know of keeping my head above water."

LAST BOOK READ: *Silence*, John Cage.

LATEST ACCOMPLISHMENT: Two new records: *Easily Slip Into Another World*, with the Sextett; *Air Show No. 1*, with Air, his other group.

WHY I DO WHAT I DO: "It was either make money or make music which for me wasn't even a choice."

QUOTE: "Tradition is a background of ingredients; in itself it's nothing. If you can't make something out of it, the world can do without it."

PROFILE: Intuitive, strong and as sharp an observer of his fellow man as his music would lead you to think.

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Zoo's new giant Japanese spider crabs are on display at the Invertebrate Exhibit in temporary cold-water holding tank designed for anemones.

enough to accommodate only four. The other crabs continued on to the Big Apple in response to an offer from the New York Zoological Society for interim lodgings at the aquarium on Coney Island; where they could await completion of their Washington exhibit tank. The tank is a monstrous 3,500-gallon affair designed so that a visitor's perspective shifts as he or she walks around it. Visitors will end up by looking down on the huge crabs but will begin by meeting them face to face.

On the whole, I'd rather meet Meryl Streep. When the Smithsonian's own William W. Warner wrote his Pulitzer Prize-winning book on the blue crabs of the Chesapeake, he titled it *Beautiful Swimmers.* "These Japanese crabs don't swim," said Jaren. So they'd rate a new title: Ugly Walkers.

Under their growth of green-brown algae (atypical of the crabs in their natural habitat and a result of the brightly lit tank they are temporarily being kept in), the crabs' true color is elusive. I take Jaren's word that, cleaned up, they come out a mottled yellow-orange. The eight ridiculously long legs are supplemented by two feeding legs with chelae (pincers). With these, a crab can guide food toward its mouth, an orifice hidden behind three banks of small, fingerlike appendages that unfold to seize food, grind it up and stuff it down. The animals feed primarily on detritus—the miscellaneous organic material that floats down from the surface of the sea, and on whatever slow-moving invertebrates they can find at their depth.

Here they eat what they are given. I watched them being fed pieces of a tasty-looking little fish. The tidbits were stuck on the end of a pole and prodded down to the chelae. Sometimes the crab got the idea and took hold of its meal. But often it fumbled away its chances and the fish slid to the tank's bottom where a voracious hermit crab went after it.

"They're not beautiful," said Jaren. "And I guess you really can't call them very bright. But they're interesting." One of their great fans, in fact, is the Japanese Emperor, who is a respected marine biologist.

I found the crabs riveting. Their huge size allows a unique close-up of their activities, as though you were watching them through a magnifying glass. Given this intimate view, you immediately forgive them for looking as though they had been put together very quickly in the dark.

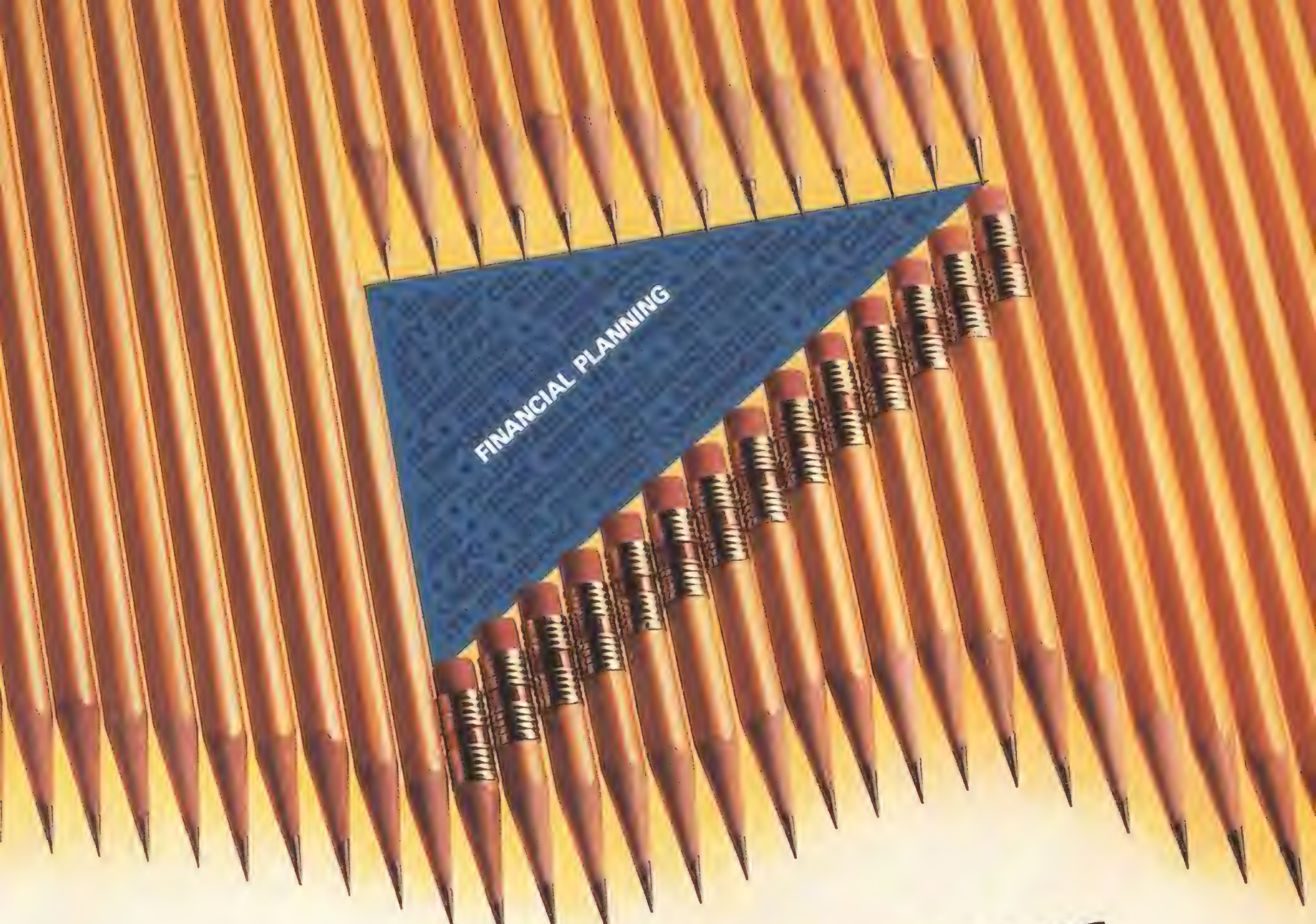
Macrocheira kaempferi occasionally loses a chela or a leg. "They'll rejuvenate after they shed their shells," Jaren said. Unfortunately, he added, they sometimes die after shedding, even though their normal life span may be more than half a century. The creatures move into shallow water to mate and lay eggs—some million and a half of them per female. But only a few of the young survive. Jaren showed us that, as with other crabs, abdomen width indicates sex; the females have the wider abdomens. Apparently the carapaces, suitably decorated, are sometimes used as masks by Japanese villagers.

The pincers on the feeding legs are feeble compared with the snapping claws on an irate blue crab. "They pinch," said Jaren, "but they don't really hurt." At the end of each walking leg is a sharp-ended, slightly curved prong. After watching a crab climb the rock cliff in the tank, I dubbed this a "piton," for the climber used it much as a mountaineer uses those metal spikes.

Holding itself in position with seven legs, the crab groped upward along the rock face, found a crevice and hooked that bony talon into it. Swinging upward, the climber brushed a leg against another of the big spiders. This second crab roused itself and started to shuffle out of the way. The trouble was, two of its legs were encased by hungry anemones, who were apparently hopeful of digesting them. The giant ponderously tried to shake off the two little predators as it dragged them along. And I recalled once trying to maintain dignity while two puppies attacked my pant cuffs.

At least six of our giant Japanese spider crabs should be moving into their permanent tank this spring, about when you read this. The tank, too, is a gift from ANA, and when I saw it, its fiberglass floor had just set, and it smelled like a new boat. Filled with water concocted of 19 chemical ingredients and chilled to 45 degrees F, it will sparkle with health and clarity. The remaining crabs will stay on at the New York Aquarium as part of a display there—a gesture of thanks from our folks at the Zoo.

The Ugly Walkers are extraordinarily impressive and entertaining. And they may get better at feeding. Anyway, don't miss a visit to the Invertebrate Exhibit, whether it's a rainy day or not.
Edwards Park



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Points of origin

Maybe Proserpine, as sculpted by Bernini, played an April Fools' joke on us by eating one pomegranate seed—dooming us to winter.

If anyone sends you for pigeon's milk or a bucket of steam, it's only April Fools'—a day with a long, prankish past

Like many baseball fans, I was intrigued a couple of years ago to find writer George Plimpton swinging for the literary fences on the pages of *Sports Illustrated,* regaling readers with the exploits of a new and unhittable fastball pitcher in the Mets training camp. The kid's name was Sidd Finch and he came equipped with a smattering of Harvard education, a predilection for the French horn and wearing a hiking boot—and with a windup that was a cross between Goofy's and a cricket bowler's. More enticing, he also possessed a fastball that had been radar-clocked at 168 miles per hour!

Obviously all this was too good to be true, especially since the magazine bore the publication date of April 1. Actually, Plimpton's opening words should have been a dead giveaway: "He's a pitcher, part yogi and part recluse. Impressively liberated from our opulent lifestyle, Sidd's deciding about yoga—and his future in baseball." Now look again, reckoning just the first letter of each word: Happy April Fools' Day—ah, fib.

I, for one, was completely taken in by this particular sports fable. I wanted it to be true. There was an update the following week, but the week after that the editors and Plimpton fessed up. Plimpton, they admitted, was driven toward this hoax by another April Fools' sports fable that had appeared a few years before in the London *Daily Mail.* That one was the tale of a Japanese long-distance runner who thought the object of a marathon was to run not for 26 miles but for 26 days. A dedicated athlete, to say the least.

Down through the ages, a kind of April Fools' Day has always been celebrated, either as a springtide fertility rite or as a simple release from the confining grip of winter. Perhaps the most frequently played trick has been to send an unwitting dupe on some kind of false errand. Apparently, if you've forgotten what day it is, you deserve to be hornswoggled.

Nor have the specific tricks visited on the unwary changed much over the years. Two centuries ago, people were sending patsies out to booksellers with an order for the *History of Eve's Grandmother* or to bird keepers for a bottle of "pigeon's milk." These days, baseball rookies are regularly sent out for an equally improbable "bucket of steam."

Great men and great locales both have been caught up in April foolishness. In 1713, the satirist Jonathan Swift—*Dean* Swift, in fact, for he was a man of the

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cloth—recorded in his journal for March 31 that he aimed to spread about town the rumor that a recently hanged criminal had been resuscitated and was now at the Black Swan in Holborn. Next day, however, Swift was disappointed to find out that so few gullibles took his April Fools' bait and came to gawk.

As for great places? In March 1860, a multitude of prominent Britons were sent an invitation, bearing invented hallmarks of officialdom, that read: "Tower of London—Admit the Bearer and Friend to view the Annual Ceremony of Washing the White Lions, on *Sunday, April 1st,* 1860. Admitted only at the White Gate. It is particularly requested that no gratuities be given to the Wardens or their Assistants." Of course, neither a White Gate nor White Lions, washed or unwashed, could or can be found at the Tower.

In another historical episode, April 1 furnished the backdrop for a great escape. Around 1700, when the Duke and Duchess of Lorraine were imprisoned in Nantes, the pair made April fools of their jailers by making their departure through the garrisoned city gate. Disguised as peasants carrying hod and rubbish, the two cautiously set out. They were suddenly betrayed to the town guards by an enemy, but the accusation was treated as an April Fools' joke and the bedraggled and obviously unroyal couple were told to be on their way. Too late to prevent the escape, the ruse was discovered; there is no record of any punishment meted out to the unfortunate soldiers.

Doubtless a primary influence on April Fools' Day is nature itself. The change in seasons is, in the Northern Hemisphere at least, truly welcome. In France, this is the season when fish, especially mackerel, are again easy to catch and the phrase "April fool" is in fact "*poisson d'Avril,*" "April fish." Perhaps the most august of those fish was none other than the emperor Napoleon, who so far forgot himself as to be married (for the second time) on April 1, 1810.

Among the Romans, April was the month to celebrate a festival called the Cerealia, essentially a fertility rite devoted to the renewal of crops. The feast honors the goddess Ceres, whose beautiful daughter Proserpine was whisked off to Hades by Pluto one fine spring day as she was gathering flowers. Ceres, the goddess of grain, was so furious that she put an immediate halt to all growing things, and winter quickly reclaimed the landscape.

Eventually, the gods allowed Proserpine to return. But because the girl had been so unwise as to eat one pomegranate seed in the underworld, she must to this day return to Pluto every six months—which accounts for our seasons.

Moreover, there's an April Fools' note to this legend as well. When Ceres first realized that her daughter Proserpine was missing, she sought her by following only an empty echo.

Too, in both the classical tale and in the *poisson d'Avril,* it should not be overlooked that both seeds and fish are universal fertility symbols. And after all, it's spring—a time when a young man's fancy turns to more than baseball. While Shakespeare suggested that "men are April when they woo," Chaucer was more informed on this point. When he opened his *Canterbury Tales* with lines about April and its sweet showers piercing the drought of March to its very roots, he was relating that narrow springtime impulse to the general reawakening of all creation. And he was putting his medieval audience on notice that this would be a devotional, "serious" work of art.

With all this emphasis on natural stirrings, reawakening and remembering—T. S. Eliot called April the cruelest month for just those reasons—clearly some sort of holiday respite was due. And in the old calendar, there was indeed one.

It was called All Fools' Day, the eighth day of a festival that started on March 25. In the Julian calendar, which held sway in Europe until late in the 16th century, March 25 was regarded as New Year's Day. Why? Because, ecclesiastically speaking, that date also represented the Feast of the Annunciation, exactly nine months before Christmas. And just as New Year's Day, January 1, a day of revelry, is the eighth day of Christmas, so April 1 caps the celebration begun on March 25.

In 1564 in France, however, when Charles IX began promoting calendar reform, a basic task was to move New Year's from March to January 1. Old habits, however, had a way of persisting, and conservatives who preserved the old gift-giving holiday on April 1 soon began to attract criticism. Eventually they began to attract mock gifts and jibes as well, and the customary prankishness of April Fools' Day soon became thoroughly entrenched.

Michael Olmert

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Phenomena, comment and notes

In the bioparks of the future, we will be able to see the natural world from the animals' point of view

Heads of museums and zoos can learn a lot by eavesdropping. As director of the National Zoo in Washington, I find that "listening in" is a corrective for my unalloyed enthusiasms; not everybody thinks that animals are beautiful or exciting. I hear preferences and aversions that are foreign to my outlook. One recurring revelation is that people in general think of animals as rather strange humans. Identifying animals with humans is totally regrettable. We urgently need to increase concern for the welfare of animals, both as species and as individuals, but to do this we need to appreciate that in most cases they live very different lives in a very different world. I think that zoos have reinforced people's tendencies to anthropomorphize animals. We have done this through the nature of our exhibits.

In presenting animals in natural settings, zoos have made enormous strides in recent years. They have moved from art gallery displays of isolated animals—masterpieces—to balanced social groupings of species, and from sterilizable cages—tiled like bathrooms—to naturalistic habitats. The word "cage" is now no longer a valid or accurate description of most animal habitats in modern zoos.

Unfortunately, in making these great advances we have continued to be strikingly homocentric. We present our habitat exhibits to human scale, from a human focal length, from human eye level, and literally colored by the biases of our sense organs. This is unfortunate because modern studies of animal behavior show that most animals not only have a different picture of the world but also attend to different parts of it. (Notice the emphasis on vision in our language and our figures of speech.) Many animals smell the world rather than see it, and many that do see it, see it in black and white, or myopically, or microscopically.

Thus it is worth thinking about some exhibits that could show (!) us the animals' world. For example, squirrels and their relatives—the gophers, chipmunks and prairie dogs—have a very different color vision from our own. Because of the structure of their retinas we know that they are most likely red-green colorblind. The green grasses of the prairies are not green to the prairie dog. We could easily make an exhibit that was an accurate representation of the prairie dog's world. Even the New World monkeys have a different color sense (p. 28). The world of the deer might seem stranger yet. Most of the time, deer probably do not see color at all. To illustrate this point we could set up some mannequins near the deer yard, one dressed in traditional bright-colored hunter's garb and the other in black and white. We could explain that the deer probably sees both as black and white—the color of the hunting jacket is only to alert other hunters.

We all know from our own experience how predators see; their eyes are on the front of their heads, which ensures stereoscopic vision and good depth perception. But we don't know what it is like to see laterally like most prey animals. The British Museum (Natural History) in London has an exhibit that makes a striking point about lateral vision. Rearview car mirrors are mounted so that when you look in them you have a rabbit's-eye view of the world. The rabbit sees to the side and to the rear, though not very well to the front, and it has a much wider field of view than ours.

It is worth considering how we might operate if we had such wide-screen vision. As it is, we tend to concentrate our attention at the centerpoint of our gaze and filter out and ignore many peripheral objects. (Just think of the behavior of the other drivers that you encounter in the average day!) What would happen if we had a nearly 360-degree field of view? Ever since I saw the London exhibit, I've been thinking about designing a device that would demonstrate how a rabbit sees. First, it would completely block frontal vision while

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Color sense of some animals is different from ours. Picture of macaws, at left, shows human perception; at right, as likely seen by New World monkeys.

providing 120-degree lateral and rear vision. Then, it would need a visor and cunningly mounted prisms. Such spectacles would turn a child's vision into that of a color-conscious rabbit. Even better would be movable ears connected to earphones to illustrate the rabbit's directional hearing. (When I was a schoolteacher I often longed for the ears of a rabbit!)

So far we have discussed only spectral sensitivity and angle of view. If we include scale and focus, things get more complex. In my late maturity—old age—I see most close objects in a blur whenever I have lost my eyeglasses. Some animals spend their entire lives in such a blur, seeing only distant objects clearly. Other animals see little farther than our arm's length. Perhaps we should design an exhibit to illustrate this, too.

Relevance is something else again. Everybody has experienced selective attention (we talk about the "face that stands out in a crowd") and many experiments have shown that animals, too, attend selectively to certain kinds of stimulation. The male three-spined stickleback is selectively attentive, in the breeding season, to the red breast of another male or the swollen belly of a female. At that season these signals have more relevance than nearly all other forms of visual stimulus.

To counteract anthropomorphism we should create at least some zoo exhibits that give us the world according to rabbit or deer or fish. This would show that ours, like all other creatures', is a minority viewpoint.

The next step, beyond doubt, is to abolish zoological parks. Nowhere else in the real world do animals live in the virtual absence of interactions with plants. The same argument is true, in mirror image, of botanical gardens. There, it is the plants that are isolated from the animals. If we are ever to really educate people about the beauty, magnificence and sheer fundamental importance of the nonhuman elements of the living world, we must create biological parks instead of zoological parks and botanical gardens. We need to produce an entity that combines the best exhibit elements of existing zoos, aquariums, botanical gardens, and natural history and ethnological-anthropological museums.

The Zoo's new Invertebrate Exhibit shows the vast complexity of the "animals without backbones" that make up well over 90 percent of all animal species, alongside details of their venerable fossil history and impact on the life of Man. Invertebrates figure in Old World art back to the time of Etruscan pottery and Egyptian hieroglyphs. In the New World, one of the giant line drawings from the plains of Nazca, Peru, represents a spider. We have facsimiles of these objects in our exhibit. Part of our plans for the future is a "hall of floral sex" to show that nearly all flowers are the plant's reproductively oriented response to the visual abilities and "noses" of insects. The "rose by any other name" really smells for bees and butterflies, not for the Montagues and Capulets. This is the kind of message that would be the essence of a future biopark.

The concept can be extended to the rest of the Zoo. We have plains bison on exhibit; they were among the founding fathers of the National Zoo since they were exhibited on the Mall before we moved to our present Rock Creek home. But we should never exhibit bison without some reference to the crucial role that they played in the life, magic and ritual of the Plains Indians.

There is absolutely nowhere in the average zoo where this philosophy would be impracticable or undesirable. Take, at random, a typical elephant exhibit. These are usually massive structures that are among the last relics of the Victorian railroad-station style of architecture—monumental buildings that dwarf and diminish the animals. But think of a different kind of elephant exhibit—one that, say, showed the giant skeletons of the elephant's ancestors. A national biopark would be a wonderful place to stress that mammoths once roamed the Rock Creek area.

Elephants also have a profound influence on the physiognomy of African savannas; they have literally determined much of the plant structure like a race of giant horticulturalists that weed and prune on a titanic scale. We know, too, that the elephant's nose is a remarkable structure, that elephants can communicate by stomach rumbles and can even count. We can find ways to illustrate all of these things without the arrogance of Grand Central Station architecture.

All this may sound like a radical new approach to the philosophy and practice of zookeeping, but I think that it is long overdue. When James Smithson proposed the creation of an institution for the "increase and diffusion of knowledge among men," he showed great vision and foresight. We really owe him the tribute of trying, in our diffusion of knowledge, to show that it can be integrated. The final message must be that it is all interconnected and magnificent.

Michael H. Robinson

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What are you saving the Chivas for?

By David Macdonald

A loving look at foxes reveals secrets of their lives in the wild

During the years that he spent spying on (and living with) red foxes, the author found out how sociable these 'loners' really are

Idyllic thoughts of spring were the farthest thing from my mind on that balmy afternoon in the Oxfordshire countryside. I'd spent the better part of the day blundering around a maze of fox trails in a futile attempt to locate the animals' den. The search had led me into a dense thicket of scrub through which I was hacking my way when I stumbled upon a weedy old tennis court. At the far end, just beyond what would have been the service line, a heap of freshly dug soil spilled out from a tangle of brier and broom. There was the den—and off to one side of the court stood a dilapidated summer house that would serve very nicely as a blind.

Fully 15 years have gone by since I took up my station in that deserted structure but I still have a vivid recollection of what happened next. At 8:30 P.M., a fox appeared near the den. From its heavy outer coat of black guard hairs, I recognized the animal as the vixen Blackfringe, one of several foxes I had been keeping an eye on for months. A field vole's tail dangled from between her lips. She lowered her head and uttered a low, warbling call. Like greyhounds sprung from the starting gate, five cubs shot out of the den. The vixen dropped the vole, and the cubs fell on it in an uproar of squealing and "gekkering," a throaty, stuttering noise that sounds like a stick rattling across a picket fence. Somehow, one kitten-size demon secured the vole, sped across the tennis court and, holding the squealing throng at bay, chewed down its furry trophy. Then the cubs scampered back to Blackfringe and threw themselves into writhing greetings at her feet. She stood still while all five nursed from her.

Eventually Blackfringe departed and the cubs played among themselves until a second adult fox trotted onto the court and warbled a summons. This was another vixen in milk—Down-White, identifiable by the unusual white fur of her left hindleg. She stood with legs stolidly splayed, ears flicking back, mouth slightly agape, and winced while the cubs pulled enthusiastically at her teats. Once she cried out and tried to spring aside, but the hungry youngsters anchored her like the guy ropes of a tent.

After Down-White finally shook free and trotted from the scene, a third adult, Equal-White, arrived. A slighter vixen, she too had a blaze of white on her left hindleg. She neither brought food nor nursed the cubs but they greeted her excitedly all the same and, in a somewhat detached manner, she joined in their play. The tumbling led them out of sight into the thick vegetation, and then there was silence.

That was my first substantial exposure to fox family life and it was enough to make my head spin. According to the prevailing wisdom, foxes were supposed to be loners. Everyone knew that. But the behavior of the creatures I had been watching—three adults administering to the needs of five pups—was anything but solitary. Obviously those animals were part of some kind of a society. How was that society organized? How did it work? Those were the questions triggered by what I saw on the tennis court that night and I've been trying to find the answers ever since.

The early 1970s were exciting years for the study of animal behavior. A new generation of field studies had begun to disclose how marvelously intricate the societies of many primates, carnivores and other wild animals are. Where once it had seemed sufficient to describe a society as a pack or a herd, such labels now seemed woefully simplistic. Researchers were discover-

"The vixens locked together, upright on tiptoes, mouths open to the sky. Back and forth they waltzed."

Illustrations by Carolyn Ewing

"Down-White sprang high in the air and then plunged, landing feet first squarely on Equal-White's ribs."

ing not only that animals display individual differences but also that the behavior of groups and individuals can be surprisingly flexible. As I made my first observations of wild foxes, I thought I saw before me the perfect animal to use as the basis for a study exploring that kind of flexibility. After all, the red fox has an extraordinary geographical range for a carnivore, spanning most of the Northern Hemisphere and embracing habitats ranging from desert to ice floe. So if ever a species provided scope for studying variations in social behavior, it seemed to me, it was the red fox. In that initial flush of enthusiasm, it slipped past my notice that foxes are elusive to the point of invisibility and, even more punishing for the researcher, do not go to sleep at night. Soon enough, I would become acutely aware of those little impracticalities.

My infatuation with foxes actually began in childhood, when I looted my medical father's plaster of paris to make casts of fox footprints. Today when people ask me why I chose to concentrate on this species, I generally reply that it offers the best of many worlds: the thrill of observing behavior rarely seen before, the satisfaction of figuring out why evolution has made these remarkable creatures the way they are, and the conviction that this new knowledge will help solve problems as grand as rabies and as small (but annoying) as the beheading of barnyard fowl. This reply is honest, but there is another answer, no less important: I study foxes because I am still awed by their extraordinary beauty, because they outwit me, because they keep the wind and rain on my face, and because they lead me to the satisfying solitude of the countryside. All of which is to say, because it's fun.

Spying from a discreet distance

Having settled on the red fox as a research subject, I decided that my first task was to untangle the social relationships between the animals in my Oxfordshire study area. I spent hour after hour, day and night, watching the creatures from the summer-house blind and spying on them at a discreet distance as they went about their business in the neighboring woods and fields. I maintained detailed records of their activities. Eventually I outfitted many of them with radio collars that enabled me to monitor their movements from afar.

One July evening shortly before dusk, I was lying concealed in a ditch not far from the tennis court when I saw Equal-White speed up a nearby ridge, hotly pursued by Down-White. But this chase was not in earnest: catching up with Equal-White, Down-White cut her off with a leftward swerve and swung around to barge against her with a shoulder. Then, with Equal-White still struggling to regain her balance, Down-White sped back down the ridge. Within

seconds, Equal-White was in pursuit, and their roles were reversed. Suddenly, both vixens stopped and nosed each other. Equal-White flopped to the ground. Down-White circled her, reaching forward timidly to prod at the prostrate body. When that evoked no response, Down-White sprang high in the air, hung motionless at the zenith of her leap, and then plunged, landing feet first squarely on Equal-White's ribs. Crouched beneath the blackthorn about 20 yards away, I could actually hear the wind rush from Equal-White's lungs.

Down-White's hindlegs never touched the ground from that jump, for she sprang in one lithe, cartwheeling movement across Equal-White's body, and was dashing fast up the hill within the split second that it took Equal-White to regain her feet. An instant later, Equal-White's ears were forward and, with her tail coyly arched, she sped after Down-White. They continued chasing back and forth, leaping in the air and cavorting in a blur of feints and parries, for 30 minutes.

As dusk drew in, the two tired of play and began to forage. Their prey were beetles and they caught several each minute, apparently detecting the crunchy morsels by ear. Then Blackfringe arrived. Down-White wheeled around, crouched, charged and buffeted into Blackfringe with a sideways, barging maneuver. With mouths agape and "snirking" loudly (snirking is an abbreviated version of gekkering), the two spiraled around each other, flinging their rear quarters into thumping contact. Blackfringe broke away and sped into the field with Down-White in close pursuit. After a short sprint, Down-White stopped. Almost at once, Blackfringe stopped, too. Without further ado, Down-White trotted up the ridge to the spot where she had been foraging before Blackfringe's arrival.

Blackfringe cocked her head, hearing a beetle; she loped to it, brushing past Down-White without a glance. Munching the beetle, she then trotted on past Equal-White, at whom she cast a sideways glance. Under Blackfringe's gaze, Equal-White curled toward the ground, legs limp, ears plastered flat back, mouth agape. She gave a shrill whine. Oblivious, Blackfringe trotted on and Equal-White, her body curved awkwardly, half crawled and half galloped after her, shrieking. She flung herself in front of Blackfringe, but was ignored. Again she swerved ahead of Blackfringe, this time throwing herself on her back and pushing her forelegs up into Blackfringe's chest and chin. Now Blackfringe deigned to notice and bounced backward, legs stiff and straight. At once the two vixens began to play an exuberant game of tag; even then, status was not forgotten. It was Equal-White, not Blackfringe, who periodically flung herself, rolling and squealing, to the ground beside her companion. Meanwhile, Down-White continued to forage.

Observations such as these built into a pattern. Clearly, there was a distinct pecking order among the vixens in a group, with one of them maintaining dominance over the others. Furthermore, I realized, my

"I was hiding in a hedge when a young woman came strolling along the footpath at a corner of the field."

David Macdonald, of Oxford University, profiled meerkats in the April 1986 issue. This article is adapted from his book Running With the Fox, *due this month from Facts on File Publications.*

study area was populated by a number of different social groups. Each group comprised only one dog (or male) fox, along with up to five adult vixens. Radio tracking revealed that the members of one group shared the same territory, and that such territories overlapped little if at all with the territories of neighboring groups. Each territory in this particular district was astonishingly small, encompassing, on the average, only about 100 acres.

While I looked for evidence that would shed additional light on the secret lives of wild foxes, fate had a trick up her sleeve regarding my own group size. One July evening, I was hiding in a hedge when a young woman came strolling along the footpath that emerged at the far corner of the field. The sight of a bearded, green-clad man crouching in the bushes seemed to make her uneasy. She faltered but then, to my growing irritation, came right up and asked me what I was doing. When, with only rudimentary civility, I told her, she realized that she had probably disturbed my research subjects. To avoid making matters worse by continuing on her way, she offered to stay put for a while.

Moments later, a fox family tumbled into view and cavorted riotously as the two of us watched. The antics continued until, in darkness, we stood listening to excited gekkerings and an occasional footfall as a fox padded nearby. With so memorable an introduction there was no turning back. Our romance was slightly unorthodox, since I was generally asleep by day and out foxing by night. The few moments of daylight we shared were spent scouring the fields in an attempt to collect 100 fox droppings for diet analysis each month. So it came about that one night, standing in a plowed field called Honeyhill near the border between the territories of Blackears and Scar Nose, I proposed. Had Jenny not accepted, much of this story could never have been written, for she became not only my wife but an indispensable assistant, as well.

Once I had determined that fox groups were territorial, I became increasingly curious about relations between them. One night in mid-May, I watched a vixen I called Whitetip foraging in Sands Field. The eastern edge of the field was bordered by a belt of conifers and scrub which, on the evidence of radio tracking, constituted the boundary with a neighboring group. As I watched Whitetip's greenish image through the "hot-eye" (infrared binoculars that make it possible to see in the dark), she meandered down that border and was momentarily lost from sight. Seconds later, a furor of gekkering came from precisely the spot where she had disappeared. All at once I saw Whitetip and a stranger rolling over and over in combat. They began barging into each other, parrying fang with fang. Then Whitetip fled, with the stranger in pursuit. Again and again,

"Skillfully, the fox avoids snapping its victim. It pauses, holding the worm taut before raising its muzzle in a slow but accelerating arc that eases the prey smoothly and intact from its hole. Then the fox deftly flips the animated spaghetti right down the chute."

"Niff would lick the unguarded nose, insert her lower canines into each nostril and jerk her head upward."

the other fox overhauled Whitetip and the two tumbled together before running on. The combatants were only a few yards away from me when Roger, Whitetip's mate, came hurtling across the field at full speed and knocked the interloper clean off its feet. Now it was the stranger's turn to flee, with Roger close behind. They crashed into the brush of the territorial border, making a terrific racket.

Moments later, Roger reappeared. His gait was so stiff-legged that he was almost prancing. When he drew to a halt not far from Whitetip, he cocked his leg on a tussock of grass in what I suppose was the vulpine equivalent of flexing his biceps.

Episodes like that convinced me fox groups actively defend their territories by excluding strangers and neighbors. The question remained as to how they manage to live in such small territories. At least part of the answer was revealed when I discovered that those foxes were eating an abundant but rather unexpected prey—the earthworm. As every fisherman knows, earthworms crawl to the surface when the weather is right. Some slither freely through the jungle of grass; others, perhaps of lesser mettle or greater prudence, retain a toehold in the soil. When the worms are up, so to speak, foxes meander slowly but purposefully across the fields seeking them out.

There is great precision in a fox's pursuit. Each fur-padded footfall follows a measured pace. Long pauses punctuate the quest, while the forager, with head cocked and ears perked, struggles to listen over the din of rustling leaves. Suddenly, the fox freezes. A worm has incautiously rasped its bristles on the grass. The fox's snout points like a laser, then plunges. The worm finds its head clasped between the fox's incisors, its tail wedged in the burrow. Skillfully, the fox avoids snapping its victim. It pauses, holding the worm momentarily taut before raising its muzzle in a slow but accelerating arc that eases the prey smoothly and intact from its hole. Flinging itself into contortions, the earthworm winds around the fox's muzzle, but the captor, maneuvering its toothy jaws with the dexterity of a gourmand's fork, deftly flips the animated spaghetti right down the chute.

You can learn a lot by watching foxes in the wild but many of the things you see are too fragmentary to be self-explanatory. You may observe the "what" (for instance, I once saw a fox dig up a buried rabbit carcass) but you won't understand the "how" or "why." (For example, does each fox remember where it buries its own hoards or is any fox likely to stumble upon any cache?) This is why I decided to enlist a spy. If I could hand-rear a fox cub, win its trust, accustom it to as natural a life as possible in my company and then go with it into the world of its wild cousins, it might seek out scent marks for me, unearth caches and perhaps even answer questions I had never thought to ask.

I acquired a female cub from a friend who had bred a pair of foxes. On our first evening together, she dined rather stickily on puppy formula before I filled

"The cries gradually subsided and the little fox finally fell asleep with her nose thrust into my ear."

"I struggled to keep up as Niff led me around. Soon she was eating the contents of her first cache."

her hot-water bottle and tenderly put her into a wooden box at the foot of my bed. As I climbed into my own bed, she began to warble. Warbling, as I now know, is what fox cubs do when they are lonely. For one so small and frail, it is a powerfully expressive sound which, even after a short period of repetition, induces great muscular tension in the chest of the listener. I lifted the waif into bed with me, achieving instant silence as she squirmed and nudged her way into the crevice between my collarbone and neck. It was an enchanting moment, and no less memorable than the succeeding one in which the warble exploded within an inch of my eardrum. It seemed to be a very long time indeed before the piercing cries gradually subsided to an ululating murmur on the pillow, and the little fox finally fell asleep with her nose thrust as deeply as it would go into my ear. Little did I know that this was to be the position in which she would insist on sleeping for the next five months. After that first night spent in sleepless fear of crushing her or, almost as bad, waking her, I had an inkling of the rigors that lay ahead.

The days and nights that followed were punctuated frequently by the mixing and feeding of puppy milk. The warming, somewhat herbal smell that soon permeated my pillow led to her being named Niff. She continued to warble, but could now be soothed readily, especially by access to an ear. When she was 12 days old, her hazy blue eyes began to open and soon she was staggering blearily about the bed.

Niff's coordination improved by leaps and bounds, and play became her main occupation. I don't know when or how she learned that biting people made them playful, but it was this discovery that led to the dreadful "nose game." She would approach a seated victim, sit on his or her knee, and nuzzle her way up until she was gently licking the end of the unguarded nose. At this point the game could go in one of two directions. The most popular involved inserting each of Niff's now-significant lower canines into a different nostril and jerking her head upward before making good a rapid escape. The second, more violent form of the game was to sink her teeth into the septum that divides the two halves of the human nose, and to hang on for as long as possible. Needless to say, Niff's reluctant partners in this cruel sport—mainly Jenny and me—did not enjoy it anywhere near as much as she did.

Soon Niff was able to accompany me into the countryside. At first, her activities had the frantic air of a confused bluebottle buzzing haphazardly about on the floor, but once she grew up there seemed to be a purpose behind every move she made. Our walks were extraordinarily stimulating events for Niff. She would flick her ears, hold her nose high; little shudders would ripple through her skin. I think much of a fox's life must be spent on a knife-edge of sensation; at such times, the creature is deluged by the acuteness of its senses. There is the jolting image of a rabbit's blinking eyelid, the clamorous squeak of a mouse several yards

"I wanted to get the cubs on film, if Niff would allow it, and so I had to push a camera ahead of me."

off, the dreadful reek of a dog's paw print. But sometimes all of this tension can be put aside. Niff and I enjoyed many moments of calm and fun, too. What could be more tranquil than lying in a pool of woodland sunshine, a fox curled up and dozing on your chest? What could be more exhilarating than a game of tag with a fox wheeling and dodging around the saplings?

When Niff was 10 weeks old, it was time to try some experiments. The first thing to test was her ability to relocate food caches. While she remained in confinement, I crisscrossed her home range, dropping dead mice along the paths she favored. When I returned to the area with her in the evening, she swiftly gulped down the first few mice we encountered. Then she picked one up, carried it into the underbrush, excavated a shallow grave and deposited the little carcass in it. She tamped it down with her nose, swept the displaced soil over it and then pushed grass back on top with her muzzle. As we continued our walk, more mice were hidden in the same careful way. I was afraid I would never be able to find the spots again, but whether I could find them again was immaterial. The question was: Could Niff?

The following evening, I struggled to keep up as Niff led me swiftly around the field. Soon she was eating the contents of her first cache. On down the field to the next, and the next, until all the cached mice had been found and eaten. Later, we hand-reared other foxes and repeated those trials to find out whether one animal would discover the caches made by another. It became clear to us that the fox who makes the cache is almost invariably the one to find it.

"Whitepaws was transformed yet again. She and Big Ears lay side by side, grooming and nursing the cubs."

That was only the beginning of Niff's contributions to science. I had a hunch that breeding within family groups was the prerogative of dominant females and I wanted her to produce some daughters so we could find out. She was provided with a mate, installed in a large enclosure on the tennis court and soon became pregnant. She gave birth under a windswept pile of brushwood on a snowy night in mid-March.

Standing beside that brush pile the next morning, I heard the wonderful mewings of suckling fox cubs for the first time in my life. Dropping to my hands and knees, I began slowly to crawl under the brush pile. I wanted to get the cubs on film, if Niff would allow it, and so I had to push a camera ahead of me. As I edged forward, I whispered softly to Niff. Every few inches I paused, waiting anxiously for any sign of alarm or aggression. At last I could peer forward and see her looking at me less than two feet away. A tremble of greeting rippled through her. Five molelike bundles were wriggling at her teats.

I managed to get the camera in position without disturbing the family scene, which more than filled the viewfinder. When I pressed the button, the noise of the camera mechanism exploded like a tractor engine starting up. Niff looked straight at the lens but did not move. I reached forward and stroked her ears and then nestled my fingers among the babies. While the camera recorded every move, Niff nuzzled the cubs

"I reached forward and stroked her ears. While the camera recorded every move, she licked my hand."

"As he matured, Unipart took to the streets, where he developed an extraordinary habit: chasing bicycles."

and licked my hand. I thought my heart would burst.

We began the following year with Niff, her mate and four daughters in the group. Niff was clearly dominant, but who would breed? As January advanced, Niff's mate only had eyes for her but the other vixens seemed keen to attract the dog fox's attention. Curiously, they also seemed drawn to Niff. One night a Rabelaisian mood spread through the group. It all started when one of the yearling vixens mounted Niff and was dislodged only with great difficulty. Then the other vixens made fumbling attempts to mount one another and even the dog fox. Tails lashed, jaws gaped, backs arched and flanks slammed in a frenzy of excitement. Four times the dog fox tried to mount Niff and four times he was rebuffed.

Two of the vixens began to play, their antics full of sexual innuendo, but then the mood snapped, the play was gone and the contest was in earnest. They whirled and spun, locked in a stalemate with their flanks pressed together, spun apart and reared on their hind legs. Again they locked together, this time upright on tiptoes, forepaws resting on each other's shoulders, heads thrown back, mouths open to the sky. Back and forth they waltzed. Ever so slowly, one vixen's stance dropped lower than her sister's, her head was thrown farther back, her tail began twisting to one side like paper curling near a flame. Then she broke, springing backward to disentangle and flee. The victor stood looking a trifle surprised.

Niff, it turned out, was the only one of the vixens to breed that season and indeed she retained control of the group for five years. Eventually, though, it was the victorious vixen of that epic fight who inherited the matriarchy after Niff died.

Big Ears becomes the "top dog"

The idea that social dominance was at the root of fox family planning gained credence as we established more captive groups and monitored their reproduction. For example, we reared three sisters, Whitepaws, Big Ears and Wide Eyes, from the time they were 4 days old. When they became adults, it was Whitepaws who emerged as dominant and it was she who bred while her subordinate sisters fed and tended her cubs. As summer turned to autumn, however, Big Ears would no longer defer to her sister and, by the time the next mating season arrived, there were two "top dogs" in the female group. As it turned out, both of them became pregnant.

Big Ears' cubs were born in late March. Whitepaws gave birth to her cubs less than a month later and almost immediately became what can best be described as a nervous wreck, seeming to forget the diligent and successful qualities she had displayed as a mother the previous year. Big Ears, by contrast, was an exemplary mother, even though her only previous experience had been as a helper. When Big Ears visited Whitepaw's den, Whitepaws would shriek in submission, grab up a cub in her mouth and flee with it. Her cubs could not tolerate such rough treatment, and soon they died.

When the last cub expired, Whitepaws emerged from her den carrying the corpse. She ran to Big Ears' den and found that the other vixen was away. She dropped the dead cub outside and went in. A few moments later, Big Ears returned to find Whitepaws

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lying inside her den with the cubs. Big Ears greeted Whitepaws and then wandered off, leaving her bereaved sister to nurse the cubs. Thus, Whitepaws was transformed yet again. Her anxiety had disappeared and been replaced by an air of calm competence.

In the following days, Big Ears and Whitepaws lay side by side, each vixen grooming and nursing the cubs. Once the cubs began to chew solid food, Big Ears, Whitepaws and Wide Eyes all fed them. Those remarkable events showed that a vixen's family life was governed by her status, and not necessarily by her ability or experience.

While I was keeping tabs on my animals in the countryside, people in Oxford began calling me about problems with foxes there. Unquestionably, foxes were thriving in the city; they were frequently seen in the quadrangles of Oxford University and widely assumed to be living off the offal of academia. I undertook a study of those urbanized creatures and found that, despite their proximity to people, most maintained a remarkably low profile. There was, however, one memorable exception to this, a fox we called Unipart.

Our introduction to Unipart began with a telephone call from a perplexed factory manager. Foxes were living in his warehouse, he complained, and the shop steward was getting restive. Later, as a student assistant and I dodged a fleet of forklifts and shouted to make ourselves heard over the metallic clunkings of the workshop, the story that unfolded stretched even our credulity in vulpine versatility. For a long time, it seemed, a vixen had been living in the midst of this industrial complex and had taken to exploring the warehouse, where she thrived on the crusts left by the night shift. Then one day she was seen trotting through the doors with her cubs. The vixen remained timorous, slipping inconspicuously between crates and girders, but one of her offspring grew brazen in his familiarity with the work force. Soon he took up residence in the warehouse, where he built up a substantial fan club.

"Once the excitement of our reunion was over, we noticed how thin and drawn Big Ears had become."

This was Unipart. Not for him the tranquil nightfall of the rustic scene, but a maze of iron beams crisscrossing in the light of fluorescent tubes, an air brake hissing nearby, cogs grating and a mechanical hoist clattering. Waking from his slumbers, Unipart would stretch himself and push his paws deep into the folds of his woolly blue blanket before jumping nimbly onto a girder. He might begin the night by trotting past racks of accessories to a pile of wooden pallets. There, as usual, a warm portion of french-fried potatoes would be waiting for him. After eating the french fries, Unipart, still only a youngster, would willingly be lured into a game. Jinking and whirling, he would pursue balls of greasy paper that the workmen threw for his entertainment and theirs.

Continuing on his rounds, Unipart would leave the warehouse and wend his way through the rest of the industrial complex, braving busy traffic, following vehicle chassis moving along a conveyor belt into the assembly plant. As he matured, he took to the neighborhood streets, where he developed an extraordinary habit: chasing bicycles. As some weary traveler pedaled homeward down a dimly lit street in the wee hours, it was indeed a remarkable sight to see a fox dash into the road and canter amiably along behind him.

The day finally came when we decided to let the sisters Whitepaws, Big Ears and Wide Eyes join the society of foxes living beyond their enclosure close to the tennis court. We made holes in the fencing to give

them free passage and they made good use of it, adjusting rapidly to life on the outside. As long as they continued to den within the enclosure, however, we were able to stay in touch with them. Then Big Ears disappeared and we concluded, sadly, that she was dead.

One night eight months later, we arrived at the enclosure to find Big Ears waiting nearby. Once the excitement of our reunion was over, we noticed how thin and drawn she had become. Her weakness for chocolate drops was unabated and, with this lure, we persuaded her to hop into the old cat basket in which, six years before, she had nestled as a 4-day-old orphan. We took her home to a shed in our garden. That night she was not well and by sunrise she had become gravely ill.

During the following two days, her strength ebbed and on the next evening I sat beside her motionless form as she lay stupefied by the toxins that leaked from her failing kidneys. She looked very small. When she lifted her head a little, I slipped one hand under her chin for support and edged a bowl of fortified milk to her lips. She hesitated, then began to lap. I was swept with a surge of hope; not only was she drinking, she was drinking while cradled by hands that had barely touched her for two years!

As she lapped, I remembered the three-hourly feeds of her cubhood, the milk drawn in an eyedropper from a mug bearing an owl design, which has remained my special coffee mug to this day. I remembered her early struggles for dominance over Whitepaws. I remembered her running free along the very same paths where, long before she was born, I had first watched Blackfringe and Down-White. Now she was exhausted. Her thin figure carried the trophies of age—the long-since-broken toe healed askew, the muzzle heavily scarred, the lower incisors worn to stubs. Slowly she lapped, her chin resting heavily on my hand, until, too ill to even lick her milky lips, she allowed her head to sink onto her forepaws. She fell asleep. A little later, as I stared at her lying dead, I found myself noticing, as if for the first time, that she had very big ears.

"She began to lap . . . . she was drinking while cradled by hands that had barely touched her for two years!"

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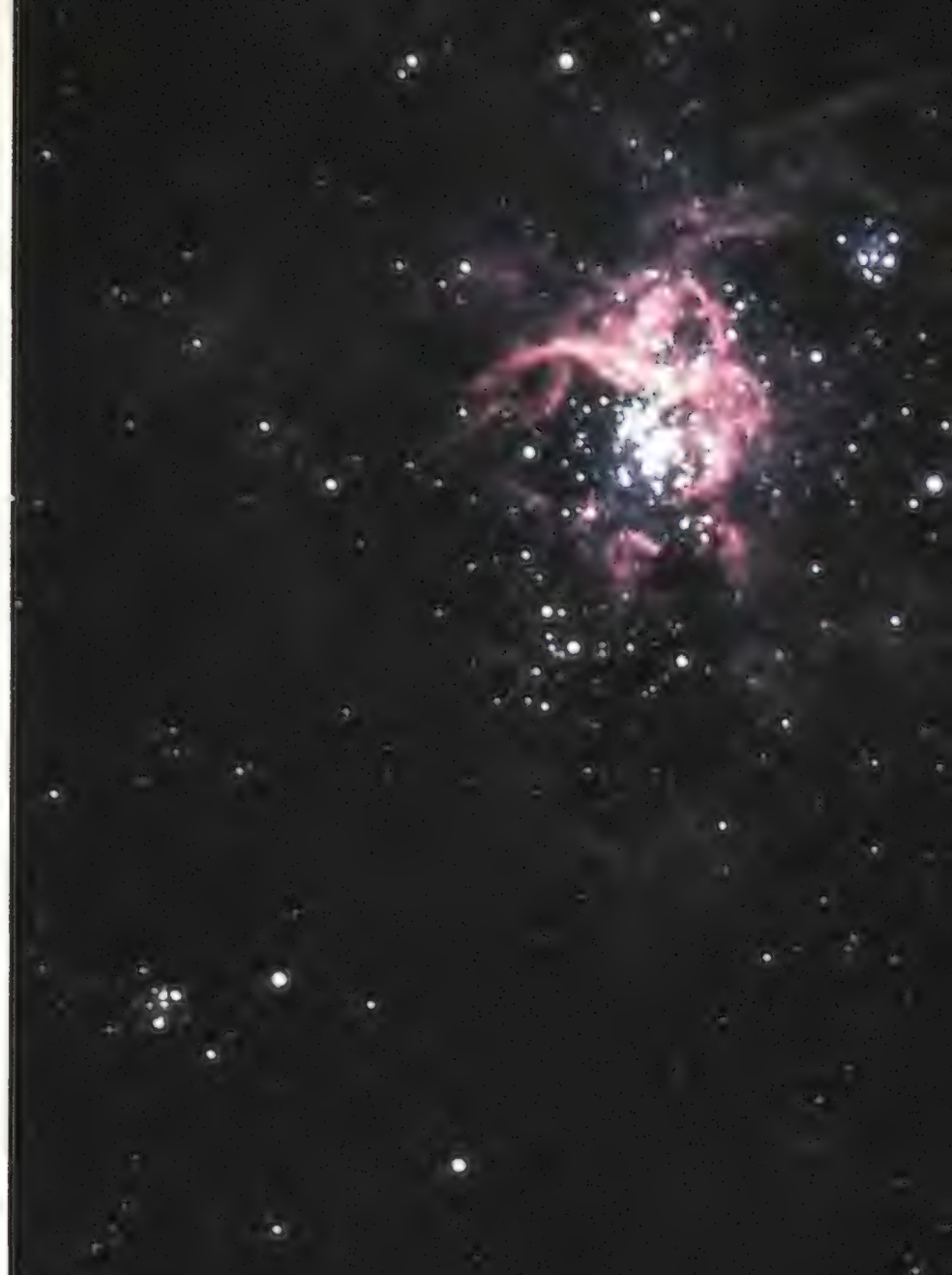
Before explosion (top), after (above): Large Magellanic Cloud shows sudden appearance of supernova. Inside the box (above), Tarantula Nebula is at upper left, "new star" is at lower right (shown larger, opposite). Shorter exposure time was used in "after" photograph.

By Stephen P. Maran

A blue supergiant dissects itself in a cosmic explosion

Astronomers waited 383 years for a nearby star to blow up. One finally did, and now we have 'seen' the cosmos seeded with heavy elements



Tarantula Nebula (upper left), supernova (lower right) burn brightly in this photograph by Ian Shelton.

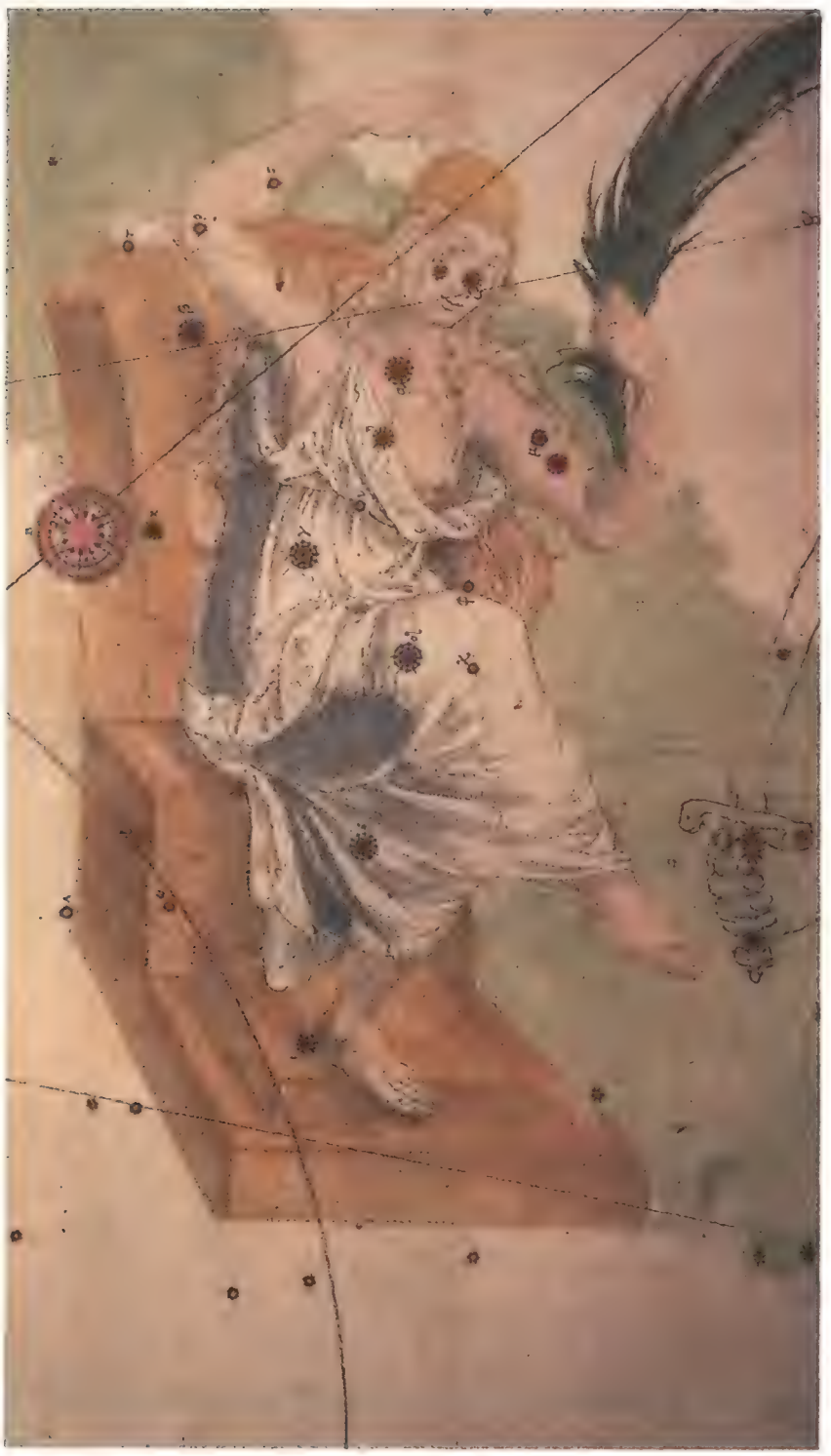
February 25, 1987, was a quiet day at the Goddard Space Flight Center outside Washington. I was walking down a hallway toward the Coke machine when I overheard the excited comment, "It's the worst one in 300 years!" A group of scientists were milling around, handing a telegram back and forth, and talking excitedly as new arrivals joined them. "My God," I thought, "there must have been a horrible volcanic eruption." But I had misheard. It was not an Earthly disaster but

Nearly all stars shown are same distance away from us, so exploding star's apparent brightness is real.

a cosmic cataclysm, spotted the day before from South America, that was arousing normally unflappable astronomers to a level of excitement that, for some, approached ecstasy. It was not the "worst" but the "first" and not a volcanic eruption but the explosion of a star in our own backyard.

Excitement flashed through the astronomical community and now, more than a year later, it is still glowing. A star, since identified as a blue supergiant, had blown up, producing a supernova, the first one clearly visible to the naked eye from Earth since 1604. More than that, it was the nearest star "seen" to explode since the invention of all the modern instruments of astronomy, and every one of these devices that could "see" the supernova in the southern sky was pulled off its scheduled observations to concentrate on the cosmic violence. Optical telescopes in Australia, Chile, South Africa and New Zealand were trained on the super-

Fiery death of a blue supergiant



Tycho's Nova, the supernova of 1572, is shown as the elaborate circle at left in 1603 chart of Cassiopeia.

nova, as were radio telescopes in Australia and South Africa. An aging NASA satellite, the International Ultraviolet Explorer (IUE), was swung around to examine it. Another, the Solar Max, detected gamma radiation from the supernova so powerful that it passed right through the metal body of the spacecraft and registered on a detector designed to study explosions on the sun. Cosmonauts on the Mir space station used sensors built by both Eastern Bloc and Western scientific teams; a new Japanese satellite called Ginga analyzed it; a telescope-equipped NASA jet, normally based in California, flew to Auckland, New Zealand; special detectors mounted in balloons and rockets were launched from Australia. For astronomers, the supernova (known as Supernova 1987A, or SN1987A for short) was—and is—the story of the century.

As a youngster reading and dreaming about astronomy, my head was full of the great heavenly apparitions of earlier times: spectacular eclipses of the sun, the repeated appearances of Halley's Comet and, rarest of all, the great supernovas celebrated down through the ages. I could calculate when Halley's Comet would next appear and took care crossing the street in Manhattan and riding the subway in Brooklyn so that I would last long enough to see it in 1986. But I knew that supernovas are so rare that the last one close enough and bright enough to be seen with the unaided eye had happened 350 years before.

Stellar spectaculars of centuries past

Growing up I wondered if I would ever see a supernova like that of July 4, 1054, which so startled Oriental and Arab astronomers; and which may have been recorded in Anasazi rock art on the cave and canyon walls of the American Southwest (SMITHSONIAN, June 1970); and which left behind the diaphanous wisps of the Crab Nebula and the stroboscopic flashing of a pulsar. Even better would be a supernova like the one that blazed forth in the early hours of May 1, 1006, the most spectacular stellar phenomenon in recorded history. It was magnitude -9, about as bright as the quarter moon. In Syria, one observer wrote that "its rays revolved and gave out light like that of the Moon." In Iraq, it was said to glitter to the left of the direction of Mecca. In Cairo, a scholar said that because the supernova appeared in the sign of Scorpio, which "is a bad omen for the Islamic religion, [Muslims] bitterly fought each other in great wars and many of their great countries were destroyed." In China, on the other hand, Chou K'o-ming confounded rival astronomers by insisting that it was not a bad sign but an auspicious one. Chou was right, at least for himself, for the records show that he was promoted to "Librarian and Escort to the Crown Prince."

The short life of progenitor star is depicted in these frames. For most of its 10-million-year life, it was a blue giant (left), fusing hydrogen to form helium in its core. When helium began to burn, the higher temperatures inflated the layers of unburned gases until the star became a red supergiant (second frame). In later stages, additional elements were fused in the core, but as temperatures dropped both the core and the outer envelope began to contract (third frame). Finally the core collapsed in on itself until nuclear forces caused it to stiffen and rebound; the resulting shock wave rushed outward, tearing the star apart.

A supernova in 1181 was noted in China, but apparently not noticed in Europe. Then the European astronomers' luck changed. The supernova of 1572 was named for Tycho Brahe, the brilliant Danish observational astronomer. That of 1604 was named for Johannes Kepler, who worked out the laws that govern planetary motion. Scholars disputed their existence, though anyone could see them. Aristotelian tradition, adopted by the Church, had long held the stars to be constant and immutable. "New stars" must be a mistake; perhaps the astronomers had been confused by Venus, Saturn or a bright, constant star such as Vega or Capella.

Two bright supernovas in just 32 years was a statistical fluke, however, akin to hitting two jackpots in a row in Las Vegas. I never had the audacity to dream I might discover one myself, but I did spend a lot of hours on "nova watch," looking for the milder phenomenon in which a star merely blows off its outer shell, brightening dramatically in the process. ("Nova" is simply Latin for "new," and in this case shorthand for "stella nova" or "new star"; we now call exploding stars supernovas to distinguish them from garden-variety novas.)

The American Association of Variable Star Observers (AAVSO) directed the nova watch: I was assigned a good chunk of Cygnus the Swan, smack in the middle of the northern Milky Way. On a clear night I would stretch out on a blanket on the roof of our six-story apartment house, my head propped on a foam-rubber pillow, and scan my zone of Cygnus with a pair of 16x50 binoculars. I never found a nova, but I had the satisfaction of knowing my sector was conscientiously patrolled. Once, on another Brooklyn rooftop, I spotted what seemed to be a nova: there was a star in a certain place where the chart showed no star at all. A pal and I immediately sent word of this momentous discovery to the director of the AAVSO in Cambridge, Massachusetts. She brought us back to Earth with the news that our nova was no new star at all, just one that had been left off the chart.

In February 1987, the real thing happened. A star much larger and much hotter than our sun reached the end of its conventional life. In its core, hydrogen in quantities equal to about six times the mass of the sun had been converted to helium in hellish thermonuclear reactions. Helium in turn had fused into carbon and oxygen, which themselves fused into even heavier elements. Eventually the innermost section of the core, about half again as massive as the sun, was turned into almost pure iron. The star was running out of available reactions, and activity in the core slackened. Now the radiation pouring outward was no longer as strong as the gravitational force pulling inward; the star collapsed, falling inward on itself until it could give no more, and exploded, spewing radiation and most of its mass into space.

The progenitor star of SN1987A was known by its catalog listing as Sanduleak -69°202. The catalog is the work of Nicholas Sanduleak of Case Western Reserve University, an astronomer who has devoted his whole professional career to cataloguing stars of potential interest all over the sky. Little did he know just how

An astronomer since his boyhood nights on a Brooklyn rooftop, Stephen Maran last wrote for SMITHSONIAN *(June 1987) on the new generation of giant telescopes.*

In the darkroom where he developed the "discovery" plate, Shelton compares his before and after shots.

At 7,800 feet, Las Campanas Observatory sits high above the ultradry Atacama Desert in northern Chile.

interesting this one would become! Although it was about 100,000 times brighter than the sun *before it exploded,* Sanduleak's star was still much too faint to be seen without a telescope because it was so far away.

Stars are born when huge clouds of dust and gas contract into denser and denser form until finally the pressures and temperatures generated are great enough for nuclear fusion to begin at the center. For most of the star's life, that time when it is said to be on the main sequence, hydrogen "burns" to form helium at the core of what is now a hot, glowing sphere. A star the size of the sun will stay on the main sequence for billions of years, slowly converting its hydrogen—the primordial "stuff" of the Universe—into helium, which builds up around the core. For a star 10 to 20 times the size of the sun, the script is similar but the timetable is radically different. The pressures and temperatures are so much greater that everything happens much, much faster: such a star will reach the end of its conventional lifetime in just a few million years. It is at the end of a star's time on the main sequence that interesting things happen. With a star the size of Sanduleak -69°202, the scenario can be spectacular.

The star eventually uses up most of the hydrogen near the core. Helium burning begins, which leads to a chain of other fusion reactions, producing carbon, oxygen, silicon—all elements we may take for granted—and eventually iron. These reactions are hotter than the original hydrogen burning, and so the envelope of unburned gases surrounding the core naturally expands, turning the star into a red supergiant (the gases expanded so far that the apparent color of the star changed from blue to red). The reason for this is straightforward. We have a source of luminosity, the core, at the center of a ball of gas. Energy moving out from the core heats the gas until the surface of the ball is hot enough to radiate away energy at the same rate the energy is being produced. Different temperatures produce different colors, much as they do in a flame here on Earth. Blue is hotter, red is cooler. But now if our sphere of gas expands while the energy being produced in the center remains the same, then each unit of the ball's surface will have less energy to radiate; the surface of the star will be cooler. This is what happened with Sanduleak -69°202: it was a blue star that for a short period inflated so much that the gases in its outer envelope cooled and its color changed to red.

The real surprise for many astronomers was that the progenitor star did not explode while it was in its red supergiant phase; most supernovas of this type that we see in other galaxies have in fact been red supergiants. (Astronomers are keeping their eye on the red supergi-

The barnlike building at right houses the 10-inch telescope used by Shelton; dome protects a 98-inch.

Oscar Duhalde, a telescope operator at Las Campanas, may have been the first person to see the supernova.

ants in our own galaxy that they believe could explode into supernovas anytime in the next few thousand years. One is Betelgeuse, the star at the shoulder of Orion; another is Eta Carinae in the southern sky.) But Sanduleak -69°202 held together and when the ball of gas began to contract again, more energy was coming out of each unit of surface area and the star appeared blue again.

Astronomers have offered a number of explanations for why it did not explode while a red supergiant. The star may have survived its red phase because it blew off tremendous amounts of material at that time, the equivalent of four or five suns, in a stellar wind analogous to the solar wind that carries a steady stream of particles away from our sun. That flow of red supergiant material moved out from the star at a sluggish rate, astronomically speaking, of as little as six miles per second. The bright burst of ultraviolet radiation from the supernova explosion later illuminated that slowly expanding shell of stellar material, making it glow like the gases in a neon sign.

The spectrum of that glow, captured aboard the IUE, has been analyzed by Robert Kirshner at Harvard and by George Sonneborn at NASA as well as by European astronomers. Inside the now-glowing wind from the red giant phase (which I will call the red wind) is a thinner, faster-moving wind that left the progenitor during the 20,000 years or so when it was a blue supergiant (the blue wind). Inside the blue wind is the outermost layer of the exploding star, the hydrogen and helium envelope, an outer region of gases that were never pulled into the thermonuclear fires deep within Sanduleak -69°202. Beneath that layer still another has come into view, ejected from the supernova at only a tenth of the speed of the outer envelope. This is the mantle of the star, deeply enriched in heavy elements such as nickel, cobalt and iron, which were created either in the nuclear furnace of the star before it turned off or in the explosion itself. The mantle is the source of the cobalt that is emitting the gamma rays discovered by Solar Max and of infrared radiation from iron and other heavy elements being studied from NASA's flying observatory.

As this is written, it appears that the full content of the mantle and regions below are still coming into view. Edward Chupp of the University of New Hampshire and Gerald Share of the U.S. Naval Research Laboratory, leaders of the Solar Max researchers, report that the cobalt gamma rays are growing stronger, indicating that more and more of the cobalt is becoming exposed as the mantle thins out into space. Nickel rapidly changes to cobalt and then to iron by radioactive decay; the energy released in this process is prob-

Diver inspects photomultipliers in five-story-deep tank of ultrapure water capable of detecting neutrinos.

The burst seen in February 1987 was the first direct evidence we have had for the birth of a neutron star.

ably what has kept the supernova remains glowing brightly for the past year.

Deeper than the mantle, deeper than we can yet see, must be the iron core of the supernova. We believe the outer parts of the core were expelled at a speed slower than that of the cobalt-rich mantle and are still hidden. The inner core lies trapped forever in the crushing gravity of a neutron star, squeezed to such density that a teaspoon of its matter would weigh a hundred million tons. The neutron star may be a pulsar, but we cannot see and do not know.

This series of expanding shells reminds me of a small Japanese toy. It is a wooden doll in the form of a bearded man. The doll can be pulled apart to reveal a smaller one with the same form but a different look: this man looks younger and has no beard. Within this second doll is a third, a young lad with a purple cap, and so on down to the doll at the core, which is just a tiny disk on which a face is painted. Each doll, like each layer of the supernova, is different, and at the center is the most enigmatic part of all.

The explosion we are seeing today actually happened a long time ago. The Large Magellanic Cloud is 170,000 light-years away, about 28 times farther from Earth, for example, than the supernova of 1054. So the explosion we saw last February really happened about 170,000 years ago, much earlier than the supernova of 1054, but its light has taken this long to reach the Earth. That burst of light has been traveling toward us since long before humans first painted animals on the walls of their caves.

As far as we know, the first person to see the light from the explosion was a Chilean amateur parachutist of Basque descent. He is Oscar Duhalde, a telescope operator at the Las Campanas Observatory. In the early morning hours last February 24, Duhalde took a break, leaving the 40-inch telescope on automatic track. He brewed a pot of coffee, then stepped outside to take a quick look at the sky before returning to the windowless control room. Glancing at the Large Magellanic Cloud, Duhalde noticed that the Tarantula Nebula, a conspicuous feature of the Cloud that is known to experts as 30 Doradus, was much brighter than usual: "My first impression was 'How bright 30 Doradus is.' As I turned away, I said to myself: '30 Doradus *that* bright?' Then I looked back carefully

and saw the real 30 Doradus and I knew this object wasn't there before."

When he returned to the control room to report his sighting, however, an anxious astronomer spoke before Duhalde could get a word out, instructing him to move the telescope to a new target. Absorbed in this task, Duhalde temporarily forgot to pass on his news.

At about the same time, a young Canadian astronomer, Ian Shelton, was working on a project of his own. An employee of the University of Toronto's Southern Station at Las Campanas, he was making a three-hour exposure of the LMC with an idle 10-inch telescope that he had been working with, using film that he had cadged from another project. When he developed the film, a bright spot near the Tarantula Nebula jumped out at him. Stepping outside he looked up and saw a star where no star had been before. Shelton spread the alarm—first to the group at the 40-inch telescope, where Duhalde immediately recalled his own sighting—and astronomers around the world raced to battle stations. (Astronomers sound alarms by cabling the Central Bureau for Astronomical Telegrams, headquartered at the Harvard-Smithsonian Center for Astrophysics in Cambridge, Massachusetts. The Bureau retransmits the information to observatories all over the world.)

Too bright for the big instruments

For decades astronomers have used their biggest telescopes to study supernovas in faraway galaxies. Because of their distances, supernovas have always been faint objects for modern astronomers, too dim for detailed study. This one was so close it was much too bright for their best instruments. "It's an embarrassment to us, but we're not equipped to observe anything that bright," said William Kunkel, site director at Las Campanas. The equipment there is designed for cosmology, the study of the Universe as a whole through measurements of extremely distant and faint objects. The sensors on the telescopes literally count photons, individual particles of light, as they stream in from dim, faraway galaxies. When the object observed is as bright as Supernova 1987A, the stream turns into a Niagara, overwhelming the equipment.

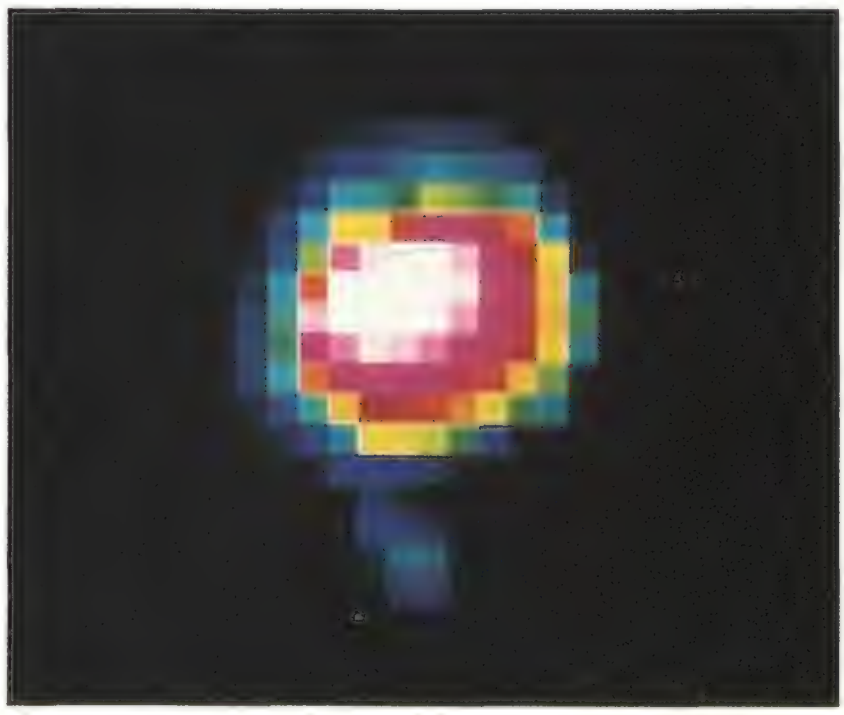
At first, astronomers at Las Campanas resorted to such stratagems as pointing the telescope away from the brilliant star and observing the little halo of supernova light reflected by molecules in the Earth's atmosphere, a phenomenon resembling (though much dimmer than) the halo around the moon on a misty night. In a neighboring range of the Chilean Andes, technicians at the Cerro Tololo Inter-American Observatory worked frantically through the day to dust off an unused 16-inch telescope.

A small telescope could more easily deal with the bright light. But Mark Phillips, a supernova specialist at Cerro Tololo, told me that even the 16-inch turned out to be too large. The observatory staff devised a circular aluminum lid, dotted with one-inch holes, to cut down the light, and ended up having to cover even some of those with black tape. Phillips recalls that as the supernova brightened further in March, April and May, observers had to tape over more and more holes until, when I visited a few weeks before it attained maximum brightness around May 20, they were down to just four open holes.

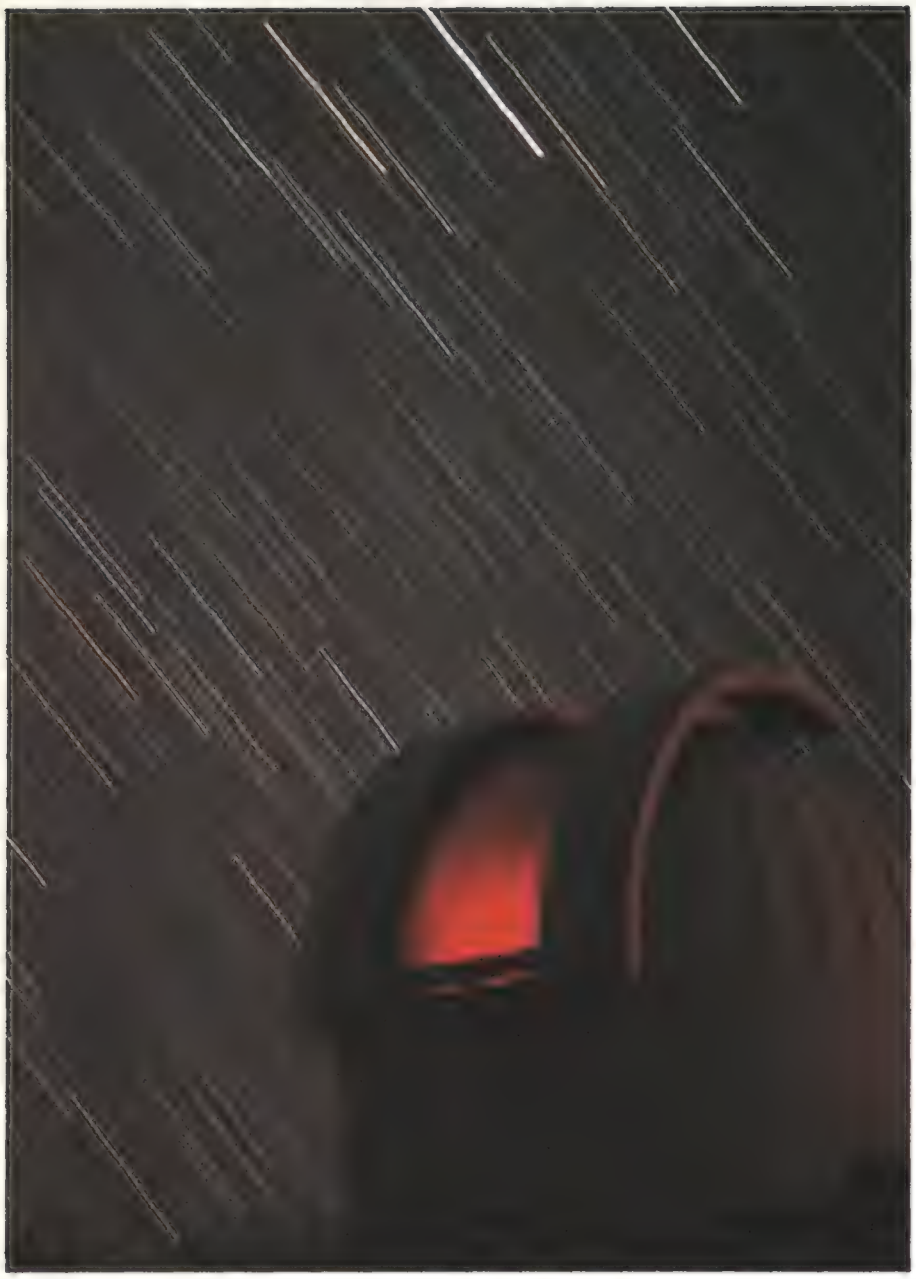
Astronomers in a Goddard control room had a similar experience. The IUE is a satellite that was launched in 1978 to carry an 18-inch telescope above the atmosphere to measure ultraviolet radiation from objects in space. Typical exposure times range from minutes to hours. Less than 13 hours after the supernova was discovered, George Sonneborn, the IUE resident astronomer at Goddard, made the first measurement with an exposure of just 15 seconds. "It was about five times overexposed," he said.

Now more than a year has passed and astronomers have learned to adjust their instruments. As the supernova fades, it is actually easier to observe with much of the equipment. Nobody's voice is cracking anymore, but the astronomical community remains in what physicists would call an excited state. Supernova 1987A has already chalked up impressive firsts:

- This is the first time the preexisting star had been observed, so astronomers knew what kind of star it was. The textbooks had said that red supergiants can be expected to become supernovas, but this one—the only case history we have—was a blue supergiant.



False-color computer image shows the supernova as a disk with the "mystery spot" extending below it.



Stars appear as long trails in this time exposure of a dome at Las Campanas Observatory, Chile.

• X rays from the explosion were detected aboard Mir and Ginga; physicists are still arguing about how they were generated.

• Gamma rays from the supernova, which only reached Earth in August, carried the identifying signature of the radioactive isotope cobalt-56, which has a half-life of just 78 days. This proves the cobalt was created in the explosion itself: if it had been made before then, most of it would have decayed into something else. This observation is the first direct evidence that heavy elements are created in the incredible heat (500 *billion* degrees Celsius) and pressure of a supernova explosion. The force of the explosion was equal to a million billion billion billion Hiroshima-type atomic bombs. Not only are heavy elements created in the explosion itself, but the blast spreads into space all the elements formed by fusion reactions in the core before the collapse. Then, new stars and planets condense out of that gas, dust and debris, with all the common elements present. Our sun and the Earth formed from such material. The oxygen we breathe, the calcium in our bones, the iron in our blood—they all come from the stars, scattered through the cosmos in the explosions of supernovas. We, and everything on Earth, are the stuff of stars.

• Most important, subatomic particles known as neutrinos, generated in the heart of the exploding star, were observed as they swept right through the Earth. The neutrinos tell us that the center of the exploding star collapsed to form an unimaginably dense neutron star, just 10 to 30 miles across. We have actually seen happen what theory told us happens.

The day we were all shot with neutrinos

Most of the energy from the explosion was carried away by neutrinos. They are enigmatic particles at best. Neutrinos ("little neutral ones") have no mass (at least most of the time) and no electric charge, thus they do not interact very much with everyday matter. Neutrinos released by thermonuclear reactions in the core of our sun pass right through a distance of 400,000 miles of seething gases as if it were nothing. Eight minutes later they fly through the Earth as if it, too, were not there. Something like 100 billion neutrinos from SN1987A passed through the body of every human being on Earth. In perhaps one of every 10,000 people, one neutrino interacted with one hydrogen atom, doing no damage.

For the first time in history, we are watching a huge star dissect itself, each successively deeper layer flying out into space at a slightly different speed so we can distinguish what each is made of.

Plenty of mysteries remain. Smithsonian astronomers Costas Papaliolios and Peter Nisenson detected what seems to have been a unique and unaccountably brilliant object, shining briefly alongside the supernova, and variously dubbed as the "companion," "mystery spot" or "Son of Supernova." Experts have suggested that the mystery spot was a dense chunk from the center of the progenitor star, hurled into space like a cannonball; or a beam of high-speed subatomic particles; or a closed structure of powerful magnetic fields belched out from the star like the so-called (and vastly fainter) solar bubbles that occasionally fly out from the sun's corona; or that it was a small cloud of interstellar matter flashed into brilliance by the initial burst of energy from the supernova. All of these theories have been deemed "physically implausible" by Boston University physicist Kenneth Brecher, however, and because no explanation seems valid and the spot can no longer be detected, some astronomers doubt the observations.

The excitement is a long way from over. Astronomers will be studying the supernova and its debris for

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C O N T I N E N T A L

The Crab Nebula, left by a supernova seen in 1054, offers a model of how SN1987A may look someday.

centuries to come, just as they have been studying the Crab Nebula, produced in the supernova of 1054, ever since it was reportedly spotted with a telescope in 1731. They are expecting more events in the aftermath of the explosion, and are already looking for:

- A burst of energy, predicted by Brecher, that may even make the faded supernova seemingly reappear when the cloud of debris thrown off by the explosion, at speeds of up to 25,000 miles per second, crashes into a cloud of gas shed earlier at a much slower speed.
- A "phantom nebula" produced by the bouncing of bright light (emitted in the early stages of the supernova) off dust clouds in space. Bradley Schaefer of Goddard says it should appear within the year. Because of the erratic path of these interstellar ricochets, we see the reflected light of the supernova long after the direct rays reached us.
- A new pulsar, sweeping beams of radiation past the Earth many times a second, like a lighthouse in the sky. The beams will come from the rapidly spinning neutron star left after the explosion. John Middleditch of the Los Alamos National Laboratory is already looking for it. Even if the pulsar is there, we may not be able to see it for a long time, however. Dust particles may condense out as the supernova debris cools; they would constitute a cosmic smog that might cut off all visible light, says Robert Gehrz of the University of Minnesota.

If there is a pulsar, according to Alice Harding at Goddard, there will be pulses of very high-energy gamma rays, powerful enough to cause dim flashes of light when they strike the Earth's atmosphere. Newly built light collectors on the ground in Antarctica and Australia, where night skies are darkest, are already looking for them.

Whatever that mystery spot was or was not, our understanding of the supernova has grown with every journal paper published, every hastily convened conference at an enterprising university, every special session at a scientific convention, almost every conversation in the halls of a hundred institutions. A year later, we have a good picture of what happened. While it was happening, things were not always so clear.

Mark Phillips remembers taking his first look at the spectrum of SN1987A while the observatory director and a crowd of spectators paced behind him—and as he spoke on the telephone to an astrophysicist in Texas who had to know what kind of supernova it was. Perhaps rattled by the commotion in the normally monastically-quiet observatory, Phillips made the mistaken judgment that he was looking at a very different kind of supernova, one that involves two stars revolving about each other in a binary system. Word of that judgment was spread around the world at near light speeds until Phillips had a quiet moment to review the data and correct himself. Another observer, under equal pressure, mistakenly announced that the blue supergiant at the position of the supernova had not exploded, thus sending astronomers off on a chase through files of old photographic plates, seeking another candidate for the progenitor star. That announcement, too, was soon corrected.

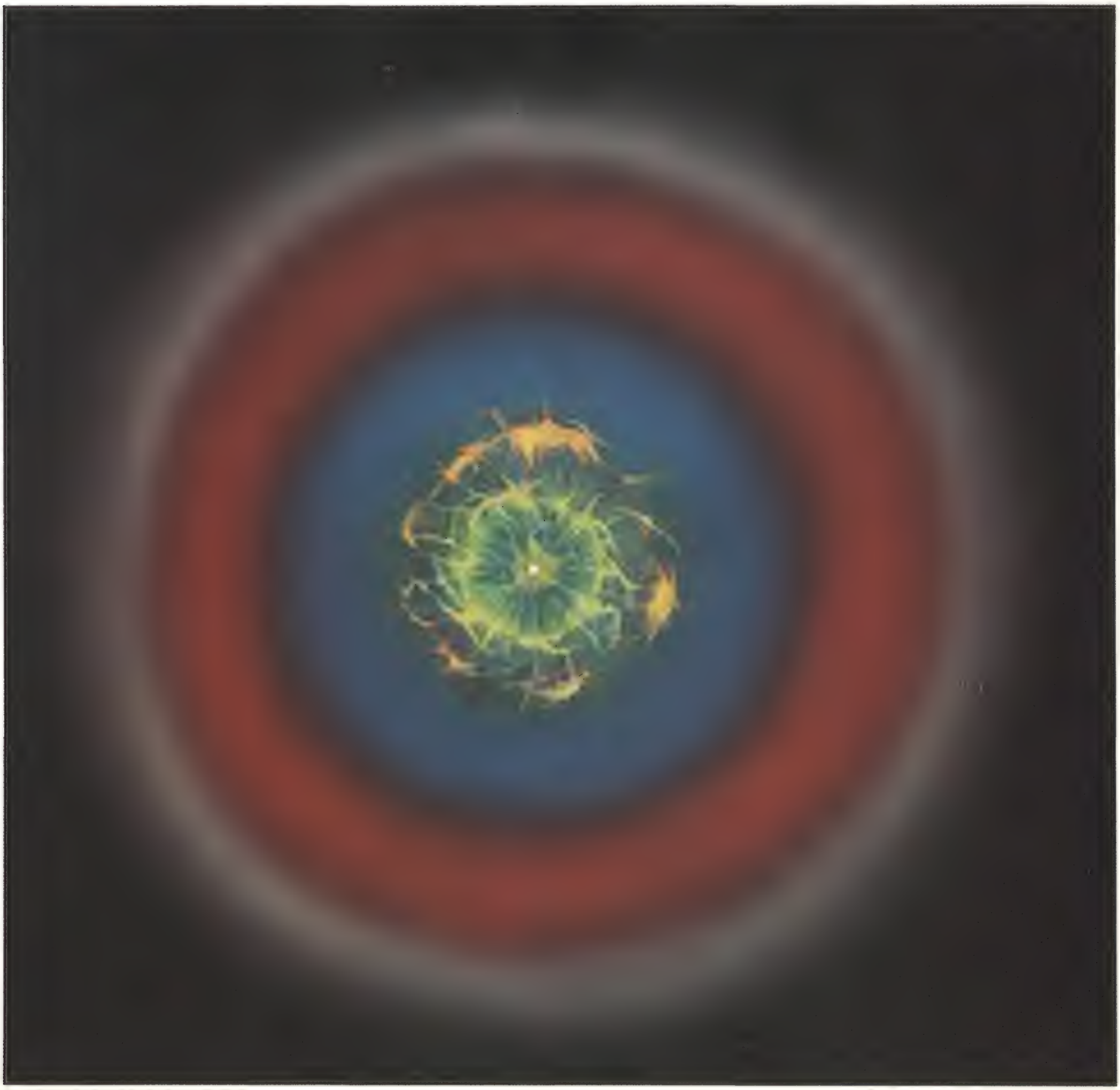
No Halley's hoopla this time around

Astronomers aside, the American public was underwhelmed. No one knew it was going to happen, so there was no buildup, no commercial hoopla, no special supernova ocean cruises. Once it happened, it was by no means a dazzling sight, and the only people who could see it anyway were those living in the Southern Hemisphere.

There, however, amateur astronomers were excited: this one was theirs. One clear night in a field on a citrus farm near the port city of Coquimbo, Chile, dentist Walter Koch set up his 8-inch telescope for a small crowd of teenagers, friends and fellow amateurs. To the south, the supernova shone, a red star brighter than any near it. Through wide-angle binoculars, I scanned the supernova and the adjacent Tarantula Nebula. Sweeping the binoculars slightly upward, I spotted the bright, fast-moving Comet Wilson, discovered by a graduate student at Caltech some months earlier. Around me, there were excited whispers of "*cometa*" and "*supernova*" that needed no translation from the Spanish. It was a great night to be an astronomer.

Hellish interior of an exploding star

In this cross section, the shells of the supernova tell us its history as they go blasting out into space. We read them from the outside in, moving forward in time as we do so. Glow around the outside is the stellar wind that blew outward from the progenitor star while it was still on the main sequence, burning hydrogen. Next in is the "red wind," the gases blown off by the star while it was in its red supergiant phase. Then comes the "blue wind," similar material from the star's briefer period as a blue supergiant. Next inward is an envelope of unburned hydrogen and helium, blown outward and "turned on" by the explosion. Inside that, the mantle is a seething region where radioactive cobalt is decaying into still more iron. At the center, most astronomers presume, there is an incredibly dense, rapidly rotating neutron star whose magnetic field roils the nebula immediately around it. Because each region is moving at a different velocity and emitting different kinds of radiation, astronomers can study all of them simultaneously. The neutron star may become a pulsar, sending out beams of radiation that flash many times a second. Artist's conception, not to scale, is based on a preliminary sketch prepared in January by David Helfand of Columbia University.



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NORWEGIAN REGISTRY

By David Lancashire

Canada's showiest bargain huckster is a real class act

Honest Ed Mirvish has built his fortune with verve; now, he and his son are producing theater classics and sending them on the road

HMS Pinafore, a Mirvish production, has just finished a U.S. tour; this year we'll see Shakespearean plays.

It's late morning, broad daylight, but the biggest electric sign in Canada is flashing away full blast. "Honest Ed's World Famous Bargain House," it says through the 23,000 blinking lightbulbs. Under the sign the shoppers line up around the block, waiting for the traditional opening rush. The lineups form every day, even in the subzero winters of Toronto, for joining the crowds at Honest Ed's is a kind of recreation in Canada's major metropolis.

At 11 o'clock sharp the doors open and the shoppers push in, jostling past the life-size wooden Indian at the entrance. ("The First Bargain Hunter," reads the inscription on his pedestal.) Inside is a consumer's cut-rate carnival—overflowing bins of merchandise from can openers to bridal gowns, flashing lights on the walls, slogans everywhere: "Honest Ed's a fat slob, but his prices keep a slim figure," "Honest Ed is for the birds. His prices are cheap, cheap, cheap!" The Honest Ed song plays through loudspeakers in the ceiling, "Honest Ed, crazy Honest Ed" at the end of each calypso verse.

Up in the shoe department, next to the 99-cent rubber sandals and the made-in-Taiwan plastic pumps, a metal fire door painted the color of mud hides the entrance to the carnival boss' office. Behind the fire door stands a second portal, this one of mahogany, leading to a carpeted ramp suitable for a Hollywood musical; and behind a big, curved desk of leather and inlay sits Honest Ed himself—Edwin Mirvish, the man named by Canadian graduates of the Harvard Business School as Canada's "quintessential entrepreneur."

Backed by honorary degrees and celebrity photographs, the dapper Mirvish displays his favorite office toy.

"Retailing is a very romantic business—I'm in here by 8 o'clock every morning," says Mirvish, who is 73 years old and not at all the crass huckster that the ambience of his store might suggest. He is gracious, reserved, soft-spoken. The dime-size white-and-gold emblem of the Order of Canada, the equivalent of France's Legion of Honor, accents his tastefully tailored lapel. "I've even been called modest," Mirvish grins. "But decorating the outside of the store with pictures and newspaper clippings of myself isn't what I'd call modesty. And that electric sign—it makes Las Vegas look like a cemetery."

Visitors to Mirvish's office used to be puzzled by a ceaseless murmur of voices and the shuffle of invisible feet from behind a set of velvet curtains. Mirvish would push a button and the drapes would roll back, exposing the pharmacy department below—there was no wall between the office and the store, and Honest

Photographs by Jonathan Wenk

Canada's theatrical business maven

On Toronto's King Street West, entrepreneur Mirvish's restaurants set off historic Royal Alexandra theater.

Ed could see at a glance how his empire was faring.

Today the office is walled off and to survey the Mirvish empire requires a view that stretches across the Atlantic to London, and perhaps to New York and Broadway. For Honest Ed is no longer simply a discount merchant. He owns, outright, two of the prime theaters of the English-speaking world (the Royal Alexandra in Toronto and the Old Vic in London, once the home of Sir Laurence Olivier's National Theatre of Great Britain) and he is a potential new theatrical force on two continents. It was Mirvish who, in 1962, saved the Royal Alexandra, Toronto's landmark theater, from being bulldozed into a parking lot. It was Mirvish who brought the musical *Hair* to Canada—the nude scenes were a daring risk in the puritanical Toronto of 1969 but the show ran for 53 weeks. It was Mirvish who recently bankrolled Britain's new English Shakespeare Company.

And it was Mirvish and his son, David, an internationally recognized art collector, who last year sent the Canadian Stratford Festival version of *The Mikado* to six cities in the United States. In New York it was the longest-ever Broadway run for a Canadian production, winning two Tony nominations for director and choreographer Brian Macdonald. A new production of *HMS Pinafore* has already played in Washington, D.C., Detroit, Boston, Chicago and San Francisco.

With two dozen new shows set for the next couple of years at the Royal Alexandra and the Old Vic, most of them Mirvish productions, more Mirvish enterprises are bound to make their way across the border to U.S. stages. "Any one of our shows might take a shot at Broadway," says Mirvish, although he stresses that this would be a byproduct; pleasing the audiences at his own theaters is the primary goal.

"Theater is more like a disease"

"Theater is exciting," Ed Mirvish says, "but I'm a businessman, and theater isn't a business, really. It's more like a disease. It's about 10 percent of my business and 90 percent of my aggravation." He is speaking in the manager's office in the Royal Alexandra, all rich woodwork and velvet, like an Edwardian jewel box.

Next door is a part of the Mirvish operation more suited to the flamboyant Honest Ed image—a block-long conglomeration of restaurants that can serve more than 2,500 customers at a single sitting. There is Ed's Warehouse, Ed's Seafood, Ed's Folly, Old Ed's, Ed's Italian Food and Most Honorable Ed's Chinese Restaurant. In case anyone should miss the massive, white-painted old buildings that contain the eateries and dominate the street, a sign three stories high proclaims "Ed's World Famous Restaurants."

All of them close at 10 P.M., which is Mirvish's bed-

Mirvish filled his roast-beef eatery, Ed's Warehouse, with antiques, some of them bought by the shopful. He likes to call the restaurant's unusual bar (right) the Cathedral to the Working Stiff.

time even on the two evenings a week when he takes his ballroom-dancing lessons with a professional partner. Mirvish is a dedicated dancer, as the competition trophies in his office attest. Whenever his mother, Anna, who worked at his store until she died at 83, heard of a shoplifter, she complained "They're stealing, and my son is out dancing." Mirvish wasn't upset. "Shoplifters have to live, too," he would say.

Honest Ed's restaurants are practically museums of kitsch; he was years ahead of his time in decorating with nostalgic bric-a-brac. But most of the pieces are authentic antiques. Life-size marble statues stand between the tables, and huge 16th-century Chinese vases. The clutter of Dresden and Sèvres is so thick that you barely notice a 1923 Ford parked beneath the stained-glass windows—"there is enough European stained glass there to start ten churches and three synagogues," he laughs. A collection of chamber pots includes one used by King Edward VII when, as Prince of Wales, he visited Canada in 1860.

Mirvish once tried to buy an old aircraft carrier from the Canadian Navy for Can$250,000, to use as a restaurant, but the 20,000-ton warship was too big to fit through the St. Lawrence Seaway to Toronto. Shopping for decor in the 1960s, he wandered into an antique store whose owner sighed that she hadn't made a sale all day. "How much do you want for the whole store?" asked Mirvish. "Ten thousand dollars," the woman said, and Mirvish answered, "I'll take it."

"Everybody tries to talk me out of doing things like this," he said at the time. That is one reason he has no board of directors and no shareholders, despite the size of his operations. (Honest Ed's store took in $65 million last year, the restaurant receipts were $14 million and the Royal Alexandra added another $10 million. Mirvish and his son control it all.) "That way I can make mistakes and still come to work in the morning," he says. "If we need a directors' meeting, David and I can talk on the way to the parking lot."

Mirvish doesn't have a secretary, either. He makes his own appointments and he jots down his answers to letters on the envelopes the letters came in, then sends them downstairs to be typed. He doesn't even have a listed telephone number for his business office—only for the bargain emporium. (A tape recording of Mirvish's voice answers, explaining that the place doesn't open till 11 A.M. because "our help sleep in the mornings.") His business card gives an office switchboard number, along with numbers for Ronald Reagan, Mikhail Gorbachev, Queen Elizabeth II, the Pope, Helmut Kohl and Yitzhak Shamir.

Mirvish bought London's famed Old Vic almost the way he bought the antique store—on impulse. He had not seen the theater—"I had never even been to England," he says. "But John Gielgud and Peter O'Toole

David Lancashire is an editor in the features department of the Globe and Mail *in Toronto.*

With his wife, Anne, and son, David (at left), Mirvish cuts the cake at birthday party for the Royal Alex.

Outside the theater after the celebration, the proud owner—his own best PR man—gives interviews to press.

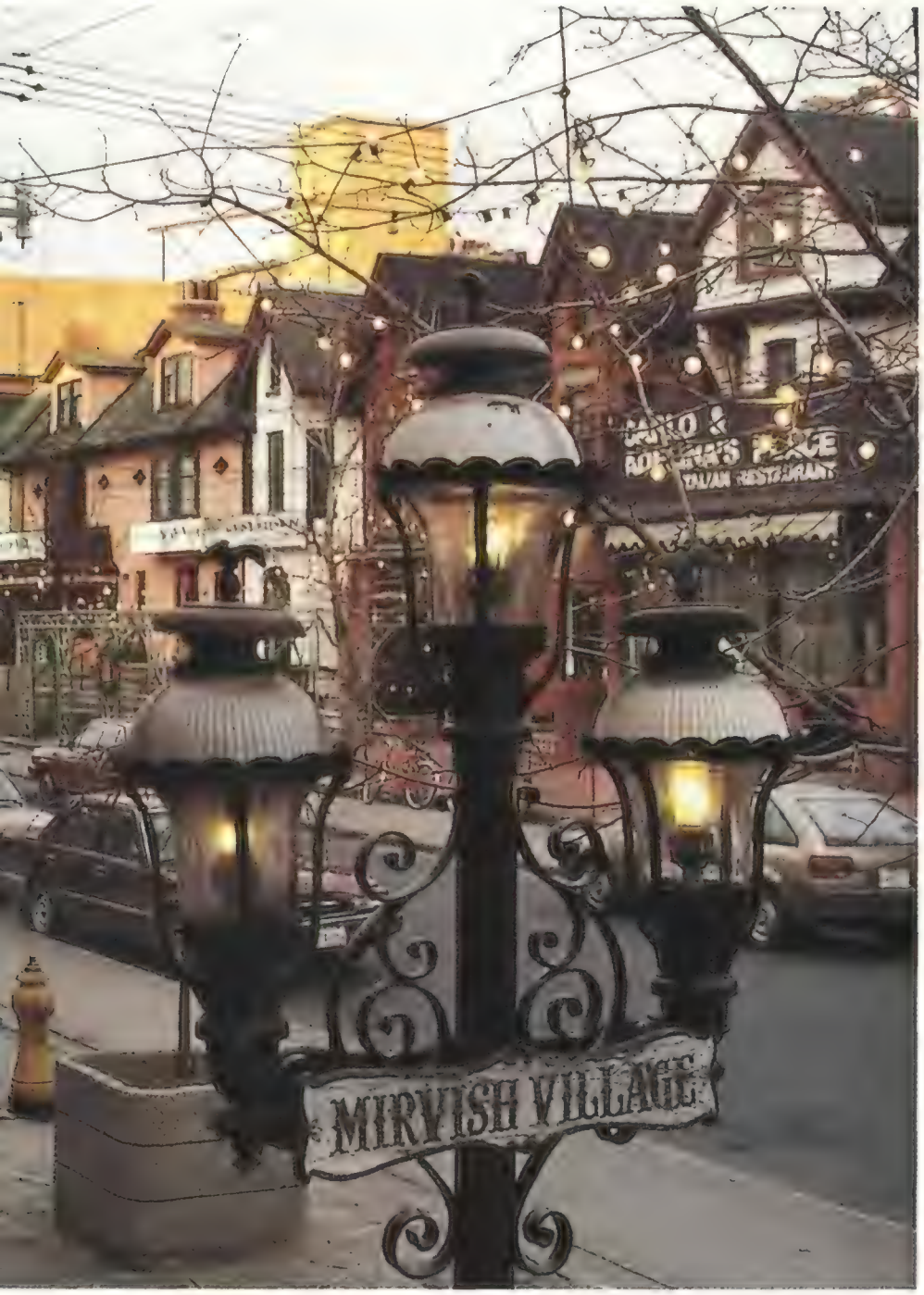
Visitor to Mirvish Village looks over the row houses stretching along a block of Markham Street in Toronto.

had told me about the Old Vic. In 1982 I heard it was up for sale and there were three days to make an offer." Mirvish won possession by outbidding Andrew Lloyd Webber, the British composer of *Cats* and *The Phantom of the Opera.* He paid £550,000 (US$984,500) for the building, closed up and decrepit, and then spent £2 million fixing it up.

In Toronto, signed photographs of stars—Olivier, Rudolf Nureyev, Ralph Richardson, Frank Sinatra, Liv Ullman and the like—many of whom have performed at his theaters, cover the walls of Honest Ed's restaurants. Mirvish loves to invite the visiting celebrities for roast beef or a steak at Ed's Warehouse (that's all the place serves) although occasionally there's an embarrassment about autographs. Customers have been known to come up and ask Honest Ed to sign a menu, ignoring the guest star at the table.

One potential guest whose photograph does not appear on the walls is Britain's Queen Mother Elizabeth, who sat with Honest Ed in his box at the Old Vic on the night the rebuilt theater opened in 1983. "It was a wonderful experience," says Mirvish. "The Queen Mother invited the family to Clarence House, too. I'd like her to come here for roast beef."

Hobnobbing with royalty was hardly what Mirvish's parents had in mind when they came to Canada in 1923 from Washington, D.C. Jewish immigrants from Lithuania and Austria, they had met and married in Colonial Beach, Virginia. Ed was born there. When he was 2, they moved to Washington and ran a grocery store at New Hampshire and T Street, Northwest. ("I visited there not long ago and it's still a grocery store," he marvels. "But the stable next door, where we killed chickens for sale, is gone.") Business was slow. When



They are home to bookstores, boutiques and artists; flashy Honest Ed's holds down the corner (at center).

Shoppers paw through merchandise in Honest Ed's, first of Mirvish's successful ventures, which opened in 1948.

Early birds stand in line to buy one of the store's frequent door-crasher specials—a $3.99 alarm clock.

Ed was in the fourth grade, the family headed for Toronto. In the cold, staid, northern city, his father sold the *Encyclopaedia of Freemasonry* door to door and then opened another grocery in the Jewish quarter. The family, with three children by this time, lived behind the store.

"It was pretty crowded," Mirvish recalls. "The upstairs was rented out to a Hebrew school. There was only one bathroom for all of us, and I could never get into it. The house I have now has six bathrooms—I'm never going to move."

When Mirvish was 15, his father died. Ed quit high school and took charge of the store. "We carried on business in a chronic state of bankruptcy," he says. "We gave credit and nobody paid." He ran the place for almost nine years and then closed it for good. Ed's younger brother Bob, who had helped out in the store, found a career of his own; he became a ship's radio officer, sailed around the world for years, and wrote and published more than a dozen novels.

Mirvish stayed in the neighborhood, worked for a supermarket chain and married Anne Maklin, an aspiring band singer. Soon Anne found herself behind a counter instead of a microphone. The couple opened a shop called the Sport Bar, selling dresses to factory girls during World War II. After the war, Mirvish expanded the premises, bought the stock of a burned-out five-and-dime store and in 1948 launched Honest Ed's with a newspaper ad saying: "Our Building is a dump! Our Service is rotten! Our Fixtures are orange crates! But!!! Our Prices are the lowest in town!" The crowds pushed their way in.

Ed wrote the store's corny advertising himself, at home on the dining-room table. He still takes a hand

Canada's theatrical business maven

Ed's wife, Anne, works in her Mirvish Village studio on a plaster model for a sculpture, which will be cast.

in writing the ads in twice-weekly meetings with his 14 buyers, the store's department heads. (All the buyers drive Lincolns, just like Mirvish's—except that the rear end of each buyer's car bears the slogan "It's fun to shop at Honest Ed's.")

The discount emporium stands in part of the city's ethnic belt, in a mixed and thriving neighborhood of immigrants, yuppies, university people and cafés. "People used to apologize for shopping at Honest Ed's," Mirvish says. "They'd make out they were getting something for their maid. Now they come here and feel they're patrons of the arts." The vaudeville style, the slashed prices and the daffy routines are familiar in North American retailing these days, but Mirvish was a pioneer in the game. In Canada, he led the way to discount pricing and after-hours shopping.

He once staged a nonstop, 72-hour sale and a marathon dance to go with it—and 80,000 customers turned up despite a three-day blizzard. While the police were laying charges against Mirvish for staying open after 7 P.M., an out-of-town police chief's wife was buying a mink stole for $1.98. A sale at Honest Ed's might feature chickens at two for 37 cents and people in tuxedos wandering around the aisles at 4 o'clock in the morning. A neon sign Ed installed on the building in 1959 was so big that when the mayor pressed a button to light it up, the power blew out on two nearby streets. Three years ago, Mirvish recruited television's Mr. T to sign autographs in the store window —and 20,000 fans blocked the street. "I have always liked the exciting, the zestful and the colorful," he says, with dry understatement.

Dance trophies and a Harvard chair

Among the colorful trappings of Mirvish's office—the collection of jade carvings and old Chinese snuff bottles, the dance trophies and a spindly steel statue called *Man the Consumer*—is a black chair with "Harvard School of Business Administration" lettered on the back. The chair is from the Harvard Business School Club, a group of Canadian graduates who picked Mirvish in 1984 as winner of their first Canadian Business Statesman Award. "He's an outstanding merchandiser and he is commercially successful in the arts, and that's rare," says James D. Fleck, a former Harvard faculty member who is now professor of management studies at the University of Toronto. Says Mirvish, "Harvard sent some people up to look us over years ago, and students still come from time to time. They've been impressed, but we may seem a bit eccentric to them, or brash."

Mirvish's methods are hardly those of a business school. For one thing, he rarely makes plans. "I just get up in the morning and let the day unravel around

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The turn-of-the-century Royal Alexandra Theatre was Mirvish's first foray into the thespian world. He paid $215,000 for it in 1962, then found he had to sink more than twice that amount into it for restoration.

me," he says. "We try things. David and I start something in a small way, trying it out. We look for the needs and take the opportunities as they turn up. If it doesn't work out, we drop it."

In 1962, the maverick merchandiser got into culture. The Royal Alexandra, which had played host to everyone from Sarah Bernhardt and Anna Pavlova to Jean-Louis Barrault and Mae West, was threatened by the wrecking ball. Mirvish, who never went to the theater ("I'm a shopkeeper; my wife went to the theater, not me"), bought it for $215,000. Then he spent $480,000 restoring its turn-of-the-century splendor (above). "If I had known anything about the theater business I wouldn't have done it," he says today. "But it seemed like a bargain."

The Royal Alexandra idea had been planted by Mirvish's wife, Anne, a sculptor who has long been interested in the arts. Her influence was felt in a later project as well. After Ed bought up an entire city block of houses adjacent to the store and converted one of them into a studio for Anne, he decided to turn the street into an artists' colony. He fixed up the 24 houses, painted them pastel colors and rented out almost 200 studios for $5 a week each. The project was in violation of zoning regulations, but the city later OK'd it and officially named the block Mirvish Village. Most of the artists' studios have now been replaced by small enterprises. But the tenants are "all creative people still—no big business is allowed," Mirvish says.

By this time Mirvish was such a city ornament that there were Gray Coach bus tours of Mirvishland. Customers paid $14.95 to spend five hours driving around Honest Ed's neighborhood, eating lunch in one of his restaurants, shopping in his store and having Mirvish show them through the theater. Mayor Art Eggleton proclaimed Honest Ed's 70th birthday as Mirvish Day, hailing the anything-but-shy storekeeper as a "key part of life in Toronto."

Anne still works in her Mirvish Village studio. Her sculptures have been shown in the United States and Italy, and Smithsonian's Museum of American History is awaiting a series of five small, abstract bronze plaques for its contemporary medal collection. Her studio is crammed with busts and statues; a huge plaster work-in-progress takes up 81 square feet of floor space, and an even bigger piece of steel is at the welder's.

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"The trouble is that we're so deeply into theater now that there's never enough time for the sculpture," Anne says. "I love the theater—I sometimes feel I'm on the wrong side of the footlights, though." This isn't always so: the sculptor occasionally closes up the studio and takes to the stage. One Christmas she toured for 34 shows as the Fairy Godmother in *Cinderella*, playing opposite Karen Kain, Canada's leading ballerina. Not long ago she acted in a movie, *The Big Deal* ("It was terrible but it was fun"), and she has performed in several Canadian Broadcasting Corporation dramas.

During the 1970s critics increasingly complained that Mirvish was peddling too-commercial merchandise at his theater; he was importing shows from New York and London's West End instead of supporting Canadian drama. To help out local experimental producers, he built and bankrolled the 125-seat Poor Alex theater, a converted garage in a plastics factory he owned, renting it out to all comers for $18 a night.

To keep his 1,497-seat theater going, though, Mirvish needs big audiences. He is just about the only theater owner in Canada to operate without subsidies or government handouts. For two decades "I ran the Royal Alex the way I ran the store," he says—buying ready-made hit shows and selling them to audiences. He also built up a core of 45,000 subscribers, who pay $55 to $215 (in advance) to see seven shows. And he delivered a lot of high-caliber material in the process; if Toronto theatergoers got to see the Glenda Jacksons and Jack Lemmons and Ian McKellens, it was thanks to Honest Ed. "But now the touring shows have deteriorated," Mirvish says. "The stars don't want to go on the road anymore and do eight shows a week. So a couple of years ago we decided to produce our own shows." His son, David, who is his only child, was given charge of both theaters. "David has great artistic judgment," says Mirvish. "Me, I have more feel for the man in the street."

Amassing a world-class art collection

David Mirvish, 43, operates from a spacious loft above the stainless-steel kitchens of Ed's Warehouse restaurant. Kilims and afghan rugs decorate the floor and on one brick wall hangs a Kenneth Noland painting 30 feet long, part of what is considered one of the finest private collections of mid-20th-century paintings in the world. At 19, David opened a gallery that introduced contemporary art to Toronto. He showed works by Noland and Jules Olitski, Jack Bush, Helen Frankenthaler, Frank Stella, David Smith and Morris Louis, selling half of them at the gallery and keeping the rest. The gallery is closed now, but David and his wife, Audrey, still have 600 pictures. An exhibition of postwar American abstract painters held anywhere in the world is likely to contain works from their collection.

An earnest, thoughtful and affable man, David has immersed himself in theater. He confers with directors on both sides of the Atlantic, reads scripts, talks to playwrights. "What we're trying to put together is excellence," he says with intensity. He keeps in touch via fax machine with the Old Vic, where he has hired stage virtuoso Jonathan Miller as artistic director for the 1988 season. He is commissioning new translations of the classics. He brought the entire 90-member cast of Bertolt Brecht's celebrated Berliner Ensemble to Toronto from East Germany. ("No other theater in North America would have done it," says Ed Mirvish. "We had critics from everywhere that week—they were flying in from South America.") A marathon package of eight Shakespeare plays covering 100 years of English history from Richard II through Richard III is touring the world. "But our own theaters come first," David says. "If our cup runneth over, marvelous—but our first job is to fill the cup."

Honest Ed's (Mirvish launched it with ads he wrote at the dining-room table) is still a tremendous success.

"David watches the casting and attends the auditions and sits in on the set designs—I don't do any of that," says Ed Mirvish. "But he clues me in on everything and I'm involved in all the deals." Mirvish senior's specialty is the marketing—selling the seats, drumming up publicity for the shows, designing the advertising. And once the opening-night curtain rises, Honest Ed is on the job. He spot-checks performances, arranges luncheons and dinners with the cast, keeps the show people happy and the production running smoothly. Mirvish also keeps an expert eye on the box office, on both sides of the Atlantic, checking the seat sales and bookings daily. Still, when he considers a project worthwhile, he is prepared to take a loss. "Every once in a while you just lose money," he has been known to say. "It keeps you from getting too smug."

Indeed, for a rags-to-riches hustler, Mirvish seems surprisingly offhand about making money. "When I started out I was hungry, but now it would be pointless to work my head off just to make more," he says. "That's why I have resisted all the offers to chain out, to expand. I never wanted to get too big. Then you just sit in an office all day and look at figures, and that's dull."

Maybe another reason Mirvish has resisted expansion is an evidently intense loyalty to his boyhood neighborhood. His giant bargain house is only a few blocks from the old family store. His old high school is just around the corner. The man who manages his restaurants, Yale Simpson, has been Ed's friend since they were 12 years old, playing together in the alleyways. Mirvish's employees stay with him for years. So do his customers—the same faces appear again and again in the lineups before the store opens. On cold mornings, he sends coffee out to the waiting shoppers.

"Business like this is fun," says Ed Mirvish. "But the theaters—they're the real excitement, and we're trying to build something with them. If all we wanted was to make millions of dollars, we could just stick with the bargains and the roast beef—bargains and roast beef are predictable."

Today, it's not only fun to shop there, it's downright chic. Once, police were laying charges against him for staying open after 7 P.M.—just as an out-of-town police chief's wife was buying a mink stole for $1.98.

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By Avis Berman

Artist as rebel: John Sloan versus the status quo

He wielded a brush like a lance, but he sided with the underdog; a small-town boy who captured the biggest city of them all

"Don't pass it by—the immediate, the real, the ours, the yours. . . . DO New York!" Henry James urged Edith Wharton when she was about to begin a new novel. His advice, tendered in 1902, was followed not only by Wharton, who went on to write *The House of Mirth*, but instinctively by many other writers and painters who were converging on the metropolis, eager to bend the leviathan to their wills. One of the most successful was John Sloan, the American artist whose portrayals of the urban life around him—flashes of joyous humanity reveling in whatever pleasures their surroundings had to offer—have shaped the now-vanished New York of our imagination.

But if Wharton hoped to preserve certain aspects of the status quo, Sloan was bent on perturbing it. Perennially in the trenches against political, social and artistic injustice, Sloan hammered away at dogma masquerading as tradition. He delivered many a body blow to the art institutions of his time and effected a revolution in the way art is publicly exhibited, one from which all succeeding American artists have benefited.

The painter of many landscapes, portraits and nudes, Sloan is most celebrated for his genre subjects: pungent vignettes of everyday life comprising equal parts of vivacity, intimacy and soot. When surveying

Memorial Art Gallery, Rochester

In 1909, eating out, Sloan saw a striking girl playing with a cat and afterward painted *Chinese Restaurant.*

Philadelphia Museum of Art

Sloan's interest in people as individuals, not as props, is evident in his *White Way*, a view of 53d Street and Broadway on a snowy night. The scene is animated by men and women discernibly alive to and engaged in both the place and the moment.

the modern city, he was not overwhelmed by the might of its buildings. He saw people, individuals emerging from the mass, fluidly adapting to their environment. Exuberantly physical, at home with congestion, and ever lively and on the go, Sloan's New Yorkers are those of O. Henry: the "Four Million," brought into visual life by an artist who excelled at reporting character and atmosphere. Sloan was not the first to scrutinize the metropolitan milieu, but his sharp-eyed observations—based on truthful occurrence rather than conventional beauty, and noted in a free and easy style that was never unduly burdened with details—reinvigorated American art.

Although Sloan's artistic territory was limited (he confined himself largely to his own neighborhood of Chelsea and Greenwich Village, with an occasional foray to Madison or Union squares), his rendering of locales is so packed with fidelity of observation that the parts genuinely stand for the whole of the city. At the time they were created, however, such scenes were almost universally damned for the very qualities we admire today. Sloan was labeled "vulgar" and "psychopathic" by critics who were certain that the realism defiled the delicate blossom of beauty. As one reviewer thundered, "Is it fine art to exhibit our sores?"

A new exhibition, "John Sloan: Spectator of Life," assembles 114 works that focus on the passing parade of New York but that include, as well, scenes of Philadelphia, Gloucester and Santa Fe. The comprehensive show is the largest ever gathered to feature his genre work in such detail. It is supported by a grant from the IBM Corporation and can be seen at the IBM Gallery of Science and Art in Manhattan from April 26-June 18. Then it travels to the Delaware Art Museum in Wilmington, the Columbus (Ohio) Museum of Art and the Amon Carter Museum in Fort Worth.

For all his chronicling of New York, Sloan was not a native. Indeed, he was a perfect example of a newcomer who responded with a fresh, unhackneyed perspective. Born in Lock Haven, a small town in central Pennsylvania, Sloan grew up in Philadelphia. His family wanted him to become a dentist. Until he dropped out to support his parents and younger sisters, Sloan went to high school with fellow artist William Glackens and Albert Barnes, the famously irascible art collector. He got a job as a cashier in a bookstore, taught himself

Avis Berman is completing a biography of Juliana Force, first director of the Whitney Museum. She wrote on Robert Henri, SMITHSONIAN, *May 1984.*

to etch and improved his skills enough to set up as a free-lance commercial artist. This led to a job as an illustrator at the *Philadelphia Inquirer.*

As he developed, Sloan took advantage of Philadelphia's abundant resources and joined its artistic coterie. He signed up for a night class at the Pennsylvania Academy of the Fine Arts, the city's venerable art school. He renewed his acquaintance with Glackens, who was also studying there and drawing for the newspapers. Another recruit for the *Inquirer*'s art department was Everett Shinn, and when he, and later Glackens and Sloan, transferred to the rival *Press,* they worked with George Luks, who was yet another artist-reporter. Whereas the other three men were quick sketchers capable of capturing fleeting events for news stories, Sloan lacked the necessary speed of execution. Hence he was more likely to be assigned decorative spot drawings and picture puzzles for the Sunday supplements. One wag said "Sloan [was] the past participle of 'Slow.'"

The other crucial influence on Sloan during the early 1890s was Robert Henri (SMITHSONIAN, May 1984), whom the artist met in 1892 and ever after credited as the person who redirected his life. Henri was only six years older than Sloan, but he had done so much more—he was an established painter, he had lived in Paris, he had seen the work of the Old Masters firsthand. In Sloan's words, "Henri could light the fire, and if there was a self-reliant, growing mind, the artist was started on his way for life." Sloan did begin painting shortly after catching Henri's fire, but he did not essay the city. On Sundays he and Glackens "would take a trolley into the country and then walk for miles 'looking for a subject,'" he recalled. "In other words, we were looking for a piece of nature that looked like someone else's picture. Later, we began to paint things in the city because they were interesting as life, and art was secondary." Henri admonished his disciples, "Don't bother to paint art—get your motives from life," an antidote to the reigning sweetness and light. Sloan first did this in 1897 when he painted some small, dark, uningratiating pictures of Philadelphia. Unaware of Cézanne, Van Gogh, Degas, his only experience of French modernism was the tepid transplant of American Impressionism, a school more given to prettiness than vigor. No wonder he would declare, "I painted my city streets in

Philadelphia Museum of Art

Study of Sloan was done in 1941 by photographer Arnold Newman, just beginning his series of artists' portraits.

Sloan thought that *Three A.M.* had "beauty, I'll not deny it; it must be that human life is beautiful."

the teeth of Impressionism—when it was fashionable to paint . . . a young lady on a beach with orange lights and purple shadows."

At 30, Sloan was freed from supporting his family. A good-looking young man—he was five feet ten, with jet-black hair, hazel-gray eyes and a jutting chin—Sloan had not gone unnoticed by the female art students of Philadelphia. Shy around women and afraid of being entrapped, he fended off the interested ones. But he was lonely and in 1901 he married Anna M. Wall, known to everyone as Dolly. She was an unusual, even shocking, choice of bride. Sloan's biographer, Van Wyck Brooks, described her well. "Tiny as a hummingbird, four feet nine inches tall, exactly the height of Queen Victoria," he wrote, "she was a tempestuous little soul, mercurial, unstable, but bold as a jay in defense of her affections and beliefs. She was a manic depressive and an alcoholic; and Sloan, who had no illusions about her, had much to put up with in the forty-two years of their life together." Henri told Sloan not to marry Dolly, but Sloan preferred her to a more bourgeois mate who might push him into giving up painting to take a well-paying job. That would have been worse than any of the miseries he did endure.

Fleeing the cultural mildew

The fine cultural loam of Philadelphia, once so enriching, began to seem like mildew to the Henri group. Luks, Glackens, Henri and Shinn all migrated to New York, the hub of much new publishing activity, and the Sloans felt bereft without them. They moved to Manhattan in 1904, taking a fifth-floor walk-up at 165 West 23d Street for a stiff $50 a month. The windows, however, overlooked the tenements, fire escapes and rooftops of Chelsea: a feast of material to Sloan, the fervent watcher and transcriber. While looking for work as an illustrator, he strolled around town taking in the sights: the iron scaffolding of the els, the prow of the Flatiron Building cresting up Fifth Avenue in the afternoon light and, above all, the hurrying tides of humanity. Lodgers, transients, messenger boys, shopgirls, housewives with bundles of groceries in their arms—they, and not the denizens of the great mansions and the private clubs—embodied the reality of the city for Sloan. "We kept away from the social veneer side of life," he said. "Instead of painting powder puffs, we painted brooms, a much more healthy thing to do."

The things Sloan saw on his travels represented an untapped source of images waiting to be molded into art, and his diaries of the period are peppered with notations that reappear in the genre work. November 18, 1906: "Henri, Dolly and I walked up Fifth Avenue which, owing to rain and repairs, is quite like an electric lit morass or quagmire. Elevated Station on a rainy night, good subject." This entry was the genesis of *Wet Night on the Bowery*, painted in 1911. November 13, 1908: "[A] blithe perhaps bibulous girl, lifts her skirts and leaps a street hydrant on gloomy 24th St." February 23, 1909: ". . . felt restless so went to the Chinese restaurant and was glad I did for I saw a strikingly gotten up girl with dashing red feathers in her hat playing with the restaurant's fat cat." Sloan painted *Chinese Restaurant* (pp. 74-75) a month later.

Hirshhorn Museum and Sculpture Garden

Sloan, who was very fond of McSorley's Ale House, painted this scene, as he said, "from blessed memory."

"Dark" days of Prohibition would not have come, he added, had all saloons been graced with its dignity.

April 28, 1909: ". . . a curious two-room household, two women and, I think, two men, their day begins after midnight, they cook at 3 A.M." This became *Three A.M.* (p. 77), about which Sloan said, "This picture is redolent with the atmosphere of a poor, back, gaslit room. It has beauty, I'll not deny it; it must be that human life is beautiful."

The New York the Sloans came to know was the city that appeared in the artist's work—hearty, flamboyant, disorderly, full of contrasts and often sordid. Manhattan was home to multiple millionaires who lived like sultans in their urban palaces, but three-quarters of the population was crowded into tenements. The Sloans themselves lived close to the Tenderloin, a wide-open zone running between West 14th and West 34th streets. Beer gardens, gambling dens, policy shops, dance halls and worse flourished there. Yet none of this, nor any other gross material fact, was supposed to be acknowledged in paint.

This straitjacket of puritanism and hypocrisy Sloan was to feel in a harsh and personal way. For its May exhibition in the spring of 1906, the American Water Color Society requested ten of his latest etchings, called the New York City Life series (all of which can be seen in the current show). But between the time Sloan dropped off the prints and the day of the public opening, the society's hanging committee decreed four of them "too vulgar" and banned them. The embarrassment lay in portrayals of families asleep on a tenement roof, a couple embracing with obvious relish while their child looks on, a slattern scanning the fashion column, and another woman happily turning out the light as her companion waits for her to join him in bed. Such scenes were too suggestive—they sullied the good name of art.

In love with "fascinating" Manhattan

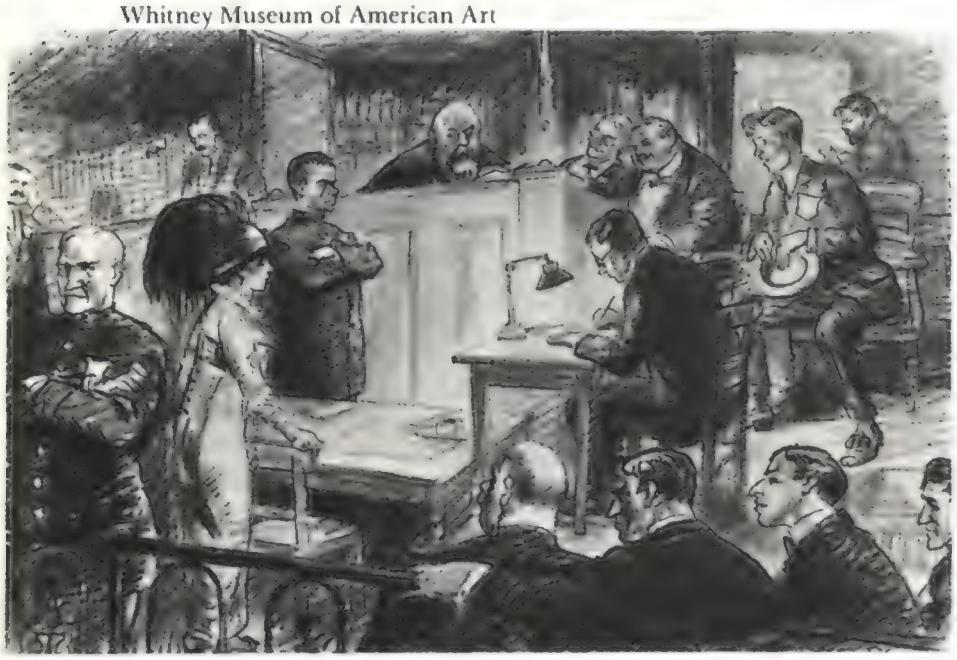
Sloan was incensed by the society's action and demanded that the other six etchings be returned to him at once. "I know these plates are not vulgar—not indecent," he protested in his diary. He had dared to present *as the norm* images of women with sculpturally round figures and avid facial expressions, women who were comfortable with themselves as sexual beings.

Sloan came from a family in which affection was not overtly expressed and he disliked being touched by people he didn't know. As a youth, he was reserved; in his marriage, he willingly settled into a less-than-ideal relationship. One outlet for his passionate feelings was New York. Sloan spoke of the city as a man might rhapsodize over a dazzling mistress. Manhattan, he wrote, "is a massive creation heaped upon one small island—ambiguous, evasive, ever changing and always fascinating, like a woman's smile." There was an equation for him between New York and youth and womanhood. More often than not, the central figure in one of his works is a blooming, vivid woman, and not one who looks particularly innocent. The late 19th-century cult of the American Virgin, which in painting typically featured a pale, ethereal young creature clad in a white robe and posed swanlike on an elaborate bench, held no charms for Sloan. His women, always contemporary in their costumes and attitudes, come in all shapes and sizes, but they tend to be plump and fleshy. They glory

Delaware Art Museum, Wilmington

Sloan was a master printmaker. Etching *Man, Wife and Child* catches the flavor of intimate family life.

Whitney Museum of American Art



In *The Women's Night Court: Before Her Makers and Her Judge,* Sloan acidly etches rage at the system.

in their attractiveness, scorning to blush at the appreciative glances of passersby when the wind assails their skirts. They are unmindful of being seen in dishabille through a window. Sloan admired these happy, healthy hoydens who were poor in possessions but rich in spirit and generous with their affections. He drew them with wit and tenderness and did not condemn. His honest presentation of working women was a radical departure from conventional portrayals of femininity. To the guardians of morality, Sloan was guilty of startlingly bad taste, for which he paid the price in popularity and sales.

Notwithstanding his indignation, Sloan was not really surprised that his etchings were censored. By now he was almost resigned to the various cold shoulders he'd received, for he had long ceased to conform to official expectations. He was 34 years old and had not sold a single painting, nor would he find an interested buyer for another seven years. (By age 50, Sloan had sold a total of eight paintings.) He and Dolly existed on what he earned as an illustrator. Yet the canvases poured forth at a faster rate than in Philadelphia, for he had taken complete artistic possession of his urban experience. He had also become proof of his own idealistic dictum that "art makes living worthwhile. It makes starving living. It makes worry, it makes trouble, it makes a life that would be barren of everything—living." In a scrappier mood he remarked, "Artists, in a frontier society like ours, are like cockroaches in kitchens—not wanted, not encouraged but nevertheless they remain."

From blackballs came the "outlaw salon"

Sloan persevered, but every small victory he notched (an honorable mention here, an acceptance in an exhibition there) was vitiated by an increasing number of blackballs, most infamously from the National Academy of Design, a citadel of conservatism whose acceptance could mean the difference between survival and failure for a young painter. The academy rewarded its friends with prizes that culminated in commissions and sales. Adversarial artists, like those in the Henri group, were frozen out of academy shows and stood scant chance of attracting dealers or patrons. Sloan was not a man to contain his resentment over such inequities. On March 11, 1907, he and Glackens first talked over the "advisability of a split exhibition from the National Academy of Design since they seem to be more and more impossible." Henri was all for it and he became the leader who selected the participating artists: himself, Sloan, Glackens, Luks, Shinn, as well as Arthur B. Davies, Ernest Lawson and Maurice Prendergast. Sloan, as the secretary-treasurer, was in charge of finance and administration. The painters

Corcoran Gallery of Art

Yeats at Petitpas is of painter J.B. Yeats, second from left. Sloan painted himself at far right.

Walker Art Center, Minneapolis

Of beach scene, 1908, Sloan thought it fun to recall how chic the girl's outfit seemed at time.

Parrish Art Museum, Southampton, New York

Hill, Main Street, Gloucester, 1918, is Sloan in a relaxed mood, catching a pleasant scene, time, place.

were called The Eight and their "outlaw salon," which opened at the Macbeth Galleries on February 3, 1908, struck the first significant blow for artistic independence in the United States—for the artist's right to show what he pleased.

Sloan sold nothing from The Eight show, but the intense commotion in the press and the resulting tour of the pictures fueled his energies as a fighter. Sloan was short on tact and long on rapid, puncturing argument, but heretofore his "Tabasco tongue" had mainly scourged art critics. Reviewers, he contended, "usually think that they are sent by God to shield mankind from what they don't care for themselves." When a visiting critic suggested that Sloan rename his pictures à la Whistler—she mentioned *Nocturne in Green and Gold*—he offered to change the title of *Girl in Studio* to *Effect of Light on Stout Healthy Wench.*

In 1910 Sloan was a prime mover behind the next assault on the National Academy—the Exhibition of Independent Artists, a venture that surpassed The Eight show in furor. And when Arthur B. Davies and Walt Kuhn proposed the Armory Show (it became a reality in 1913 and the most important art exhibition ever to be held in America), Sloan was represented in it and helped with the hanging.

Art insurgency went hand in hand with political and social crusading for Sloan. He was outraged by official corruption and the unfair treatment of the poor by the legal system; he visited the Jefferson Market night court and was disgusted by the summary justice meted out. His attitude is seen in *The Women's Night Court: Before Her Makers and Her Judge*, a 1913 drawing that comments on the double standard (p. 80). In 1910, he joined the Socialist Party and ran for assemblyman, getting 102 votes. From 1912-16, he was art editor of *The Masses*, the satirical muckraking magazine of the Left.

Sloan's art entered a new phase in 1914, when he rented a cottage in the fishing village of Gloucester. There he began painting outdoors directly from the subject instead of recapturing a memory in the studio. He was also profoundly affected by the Armory Show, where he was able to study Post-Impressionist and Cubist art in quantity. As a result of these two events, Sloan's palette brightened. Whereas his earlier paintings were draped in browns and grays, the Gloucester pictures shone with brilliant reds, yellows and greens. Sloan painted 90 canvases that summer and he would return to Gloucester for the next five. Although his color and compositional habits changed, he remained faithful to his enjoyment of tangible objects and of people and their activities. In *Hill, Main Street, Gloucester*, for instance, the accent is not on nature but on the man-made character of the place. The eye picks out the relaxed strollers, the juxtaposition of a horse-drawn wagon plodding up the hill with an auto that is leaving a trail of dust and smoke (left).

The year 1916 marked another turning point for Sloan. In January, his first one-man show was held at the Whitney Studio, a forerunner of the Whitney Museum. The exhibition received considerable attention, including a warning by *American Art News* that the works "were rather brutal expressions, which will not appeal to those who like subtle charm, poetic color and sensitive painting." Nevertheless, Sloan was invited to join the Kraushaar Galleries (a connection that continues to this day) and in the fall he began teaching at the Art Students League. A popular instructor, Sloan attracted a variety of students to his classes and over the years many became well-known artists. Among them were Alexander Calder, David Smith, John Graham, Peggy Bacon, Reginald Marsh, Adolph Gottlieb and Otto Soglow.

The bumpy road to Santa Fe

In 1919, the Sloans went to Santa Fe with the painter Randall Davey and his wife. The trip took them six weeks—"not a decent road west of Buffalo," said Sloan. Their car consumed a quart of oil a day and got four miles to the gallon. If the driver picked up speed, the engine made a noise "like a soul on its way to hell." But the astonishing landscape of New Mexico made the trip worth it. Sloan spent the next 31 summers in Santa Fe, testing his awakened sense of color and more deliberate practice of design. He painted the desert, the mesas, the piñon trees, the pueblos and the rituals of the native Indians.

Living for several months a year outside of New York and teaching at the Art Students League weaned

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Sloan away from urban scenes. But some of his best city pictures were painted in his later years. No longer in search of a specific incident for inspiration, Sloan adopted as a motif the panorama of the skyline laid out before him. *The City from Greenwich Village* (1922) is a completely realized work, a masterly fusion of technique and observation in which balanced design is played off against bold color. The elevated railroad rounds the curb like an animal, the spires of far-off Wall Street glow like cathedrals, the lights are reflected in the wet pavements, and the entire scene is simultaneously luminous and dark. The painting also reaffirms the artist's idea of New York as a paradise, paradise being the place where his art reached fruition. As Sloan said, "Artists are the only people in the world who really live. The others have to hope for heaven. That is why heaven is such a success as an idea."

Sloan remained the rebel and the iconoclast throughout his life. He was active in many important movements for artistic independence, from championing the federal arts projects to joining protests against the destruction of Diego Rivera's murals in Rockefeller Center (SMITHSONIAN, February 1986). "Compromise," he said, "may be a wonderful word in the world of diplomacy and social politics, but it is the death of art." Age did not blunt the convictions of a lifetime, including his hatred of prizes and official honors. As late as 1950, the prospect of accepting an award from the American Academy of Arts and Letters made Sloan uncomfortable. The 79-year-old artist defined the medal he was about to receive as a "distinction preceding extinction, a symptom of disintegration." A few days after his 80th birthday, Sloan learned that he had intestinal cancer and went into the hospital. The operation was successful but he died of complications on September 7, 1951. Before the surgery he said, "It's a fight, isn't it?" Fitting words from a warrior whose indignation did so much to rouse American art from its slumbers.

Spring Rain, 1912: ". . . my motive was to record this glimpse of an ankle (an ankle counted in those days) and the fresh green and the spring rain." But, in the end, Sloan said his main interest was color.

Delaware Art Museum, Wilmington

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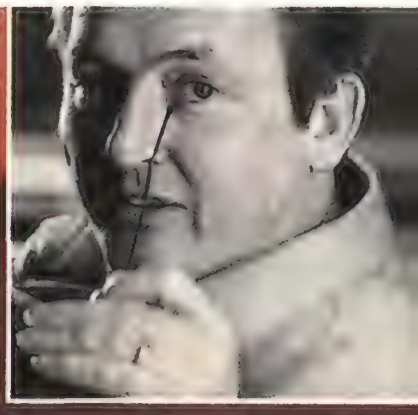

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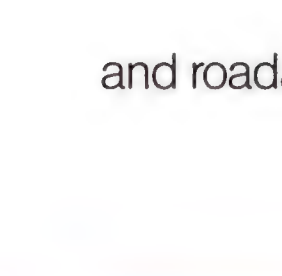

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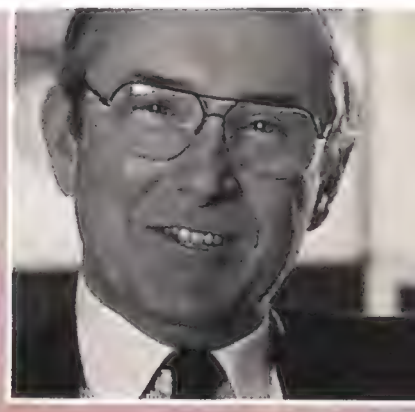

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Equipped with knee guards, and exhibiting world-class concentration, marbles contestants (from the left) Mickey

By Paul Dickson

Kids and collectors are still knuckling down to business

Adults now pay large, round sums for marbles, but the game is strictly for the young who try to knock immies and mibs out of a ring

There was a time not so long ago when playing marbles was a very big deal, a popular pastime and a bona fide rite of spring—early spring to be exact.

The game seemed to have a special appeal in places where the ground had recently thawed and holes (pots), circles (rings) and troughs (gullies) could be created in the dirt with one's heel. As if by prearrangement, a certain moment came in every neighborhood when the chamois bags, cigar boxes and coffee cans full of "mibs" came out of the closet and marble games would start popping up across the cold ground like so many crocuses.

For weeks teachers then had to complain about the constant click of marbles in kids' pockets, and parental discourse dwelt on the dreaded muddy-knees problem. Among the participants, prizes were displayed or triumphantly clanked in their bags like private treasures. There was talk of entering the local tournament, usually run by the playground and recreation department, and occasional dreams of getting into the nationals, then, as now, held in New Jersey each June.

Times have changed and—a few niches and corners of the country to the contrary—these days it is hard to

Ostrelich, 13, Ryan Collins, 12, and Prentis Harmon, 11, press their knuckles to the ground and take aim.

find a game in progress even in the spring. A rite has become a rarity. But the National Marbles Tournament is still held and last year I journeyed to Wildwood, New Jersey, to see it.

Wildwood turned out to be a flashy place of megawatt arcades and carnival-style amusements, with wall-to-wall pizza stands along its boardwalk, all in all a heady and alluring spot to come to for six days just after school has let out. Boys and girls who compete at marbles are mostly from small towns, and the neon and bright lights seem especially beguiling to them. But the appeal fades as the finals near. On the last morning the main topic at breakfast in the coffeeshop, attached to the motel where most of the 200 contestants and hangers-on stay, is about the skills of the game—such things as "eye position" and control. The word "luck" is saved for something out of the ordinary.

Marbles tends to be a quiet game of clicks, whispers and subdued clapping, something like what a sun-drenched billiards tournament might be. But for an ancient marbler who has waited close to 40 years to observe the World Series and Super Bowl of marbles, it is a pleasure to be reminded that the game is one of the few sporting events that are geared to kids only, and one in which you are not only washed up at 15 but not even allowed to compete. At the tourney, when the finalists meet the local press, reporters have to bend over to get face-to-face interviews.

The actual play takes place on a series of eight massive, square, concrete playing pads set out on the white beach. Contestants are often surrounded by nervous relatives, escorts and coaches, while judges sit on a raised wooden platform and make official announcements over a booming public address system.

Directors strive manfully to keep the tournament national but in fact most of the contestants are from towns less than a day's drive from Wildwood. As it has been for some years, the field is clearly dominated by youngsters from traditional dynasties of marbles power—Maryland, West Virginia and Pennsylvania. (With ten boy's titles and seven girl's titles, Pittsburgh leads as the home of national champions.) Nevertheless, when I was there the local champions hailed from six states and one girl champ had journeyed East from Ypsilanti, Michigan.

All during the tournament the directors kept telling

Color photographs by Gail Mooney

Proper shooting form requires at least one knuckle down. Power and backspin come from snap of thumb.

In the 1930s, comic-strip marbles cost a lot: 25 cents for a box of 12. Now they fetch up to $75 apiece.

anyone who would listen that the marbles tournament was in deep trouble. The tournament costs between $25,000 and $35,000 to put on. And mostly, it appears the tournament has had to survive from year to year on a shoestring. It had been backed by the giant ITT Corporation, which also produced the *Big Blue Marble*, a weekly children's television show. But seven years ago the show was canceled and the tournament lost its corporate sponsorship. Lack of a sponsor has since driven the registration fee from $75 to $165. Though that covers room and board for a week, it is clearly a deterrent to entry, especially for kids from a long way off.

The game played in Wildwood, and that has been played in local championships for years, is called ringer (also ringers, ringo and ring taw). It is what Dickens and Twain probably played as kids and has long been the game you played after learning how to shoot well, which is to say, accurately, with controlled backspin. In 1884 the British *Saturday Review* declared ringer the only "real game of marbles."

Ringer has a set of rules that seem to cover every eventuality up to and including a marble moved by the wind, but the gist of the game is to see who can shoot the most of 13 marbles out of a ring 10 feet in diameter. The 13 target marbles are laid out in a cross pattern at the center of the ring and play starts after the two players have "lagged" for the right to go first in the first game of the match. ("Lagging" is shooting to see who can come closest to a designated line.)

The game begins as the lead player picks a position and knuckles down with his shooter hand outside the ring. The aim is to knock a marble out of the ring while leaving the shooter in it. As long as your shooter remains in the ring and a target marble is knocked out, you keep shooting. Otherwise your opponent takes over. After a miss, you pick up your shooter and hold it for your next turn, which you start by "taking rounders"—that is, picking the best position you can find around the perimeter of the circle—and then beginning to shoot once again.

The first one to knock seven marbles out of the ring wins. The true mark of a champ is the rare ability to score a "stick," i.e., knocking seven consecutive marbles out of the ring on the first try without losing a turn. At Wildwood the boy's champion is the winner of 11 of 21 games. For girls it is 6 out of 11. This year there has been an increase in girl participants, so the rules may be changed to the best of 21 for both. Unlike cutthroat backyard marbles, all tournament play is "for fair," which means you don't get to keep the marbles you knock out of the ring. Anybody who gets as far as Wildwood is an extremely accurate shooter at ranges of up to a yard, and a master of backspin, the crucial thumb-driven force that sends a target marble flying out of the circle but spins the shooter backward on contact so that it stays inside the circle for the next shot.

Marble tournaments have their own traditions and lore. People still talk about the first national championship back in 1922 when Bud McQuade took his famous "half-marble shot." In the final game of the match his agate shooter split one of the marbles in the ring in half. One half flew out of the ring but the other

Paul Dickson first knuckled down in Yonkers, New York, 40 years ago. His new book, Family Words, *will be published by Addison-Wesley this fall.*

half stayed inside. The officials ruled that he would have to knock the second half out of the ring with his next shot or lose the point. McQuade hit it low and hard and the half-marble leapt out of the ring like a golfer's chip shot. McQuade went on to win the championship.

Since the end of World War II the nationals have changed little. The year 1948 saw the addition of a girl's championship, created after several girls made a serious run at the national title. The image of tournament players is so wholesome that in the late 1970s it managed to survive an image-challenging 14-year-old champion with a tattoo on his shooting arm, who chain-smoked cigarettes between games.

Ringer has always been the big-time marble game, but there have been at least 50 others including such local favorites as Newark Killer and Last Clams, and a New Hampshire-spawned game played by using narrow trenches dug in the snow. Persian is a rainy-day form of marbles played on your mother's Oriental rug with a ring woven in as part of the design.

Marbles has its own elaborate language, always precise and often legalistic. Histing (pronounced heisting) refers to the act of raising one's hand from the ground when shooting, while hunching (strictly forbidden but sometimes attempted) is moving one's hand forward while shooting. A shooter marble can be a taw, bowler, reeler or monnie, while target marbles are variously known as ducks, stickers, dibs, hoodles, kimmies, immies, commies and mibs. By material, marbles are variously steelies (steel ball-bearings), aggies (agates), crockies (fired clay) and glassies (those made of glass). Glassies can be solids, rainbows, bumblebees, milkies, cat's-eyes, pureys and clearys. (For readers born after 1960, a purey is a pure cleary—that is, one without a single air bubble.)

A snooger is a marbler's challenge

A deegle is a marble that leaves the game area and ends up in the weeds or as part of a nearby game. A snooger is a marble left fairly close to the edge of the ring by your opponent.

In my old neighborhood in Yonkers, New York, a marbler had about a dozen prescriptive shouts he could use, and a fast lip was almost as important as a skilled thumb. If, for instance, you hit a pebble with your marble and yelled "Burns!" before someone else let out with "No burns!" you got to shoot again. Yelling "Evers and ups" before your opponent could yell "No evers and ups" or "No knuckles down tight" allowed you to lift your hand off the ground while shooting. In that neighborhood the most important preventive shout was "No grindings" because someone else could yell "Grindings," which allowed the yeller to grind your shooter into the ground with his heel.

Preemptive shouts seem to have pretty much disappeared today for some reason. But otherwise, basic marblese is still heard at Wildwood. Targets are mibs and agate shooters are aggies. Coaches are mindful of the penalties for hunching and warn their charges against it. Contestants still speak of snooger and knuckling down, and shooters are still referred to occasionally as taws, a word dating back to the 18th century at least, which may derive from a time when marbles were made of alabaster, corrupted to "alley tors" and so to taws. In Charles Dickens' *Pickwick Papers,* Mr. Serjeant Buzfuz condemns Pickwick by describing Master Bardell's melancholy: "his infant sports are disregarded . . . his 'alley tors' and his 'commoneys' are alike neglected; he forgets the long familiar cry of 'knuckle down.'"

Contestants still ritually cup their shooters in their hands and blow on them before shooting. This is no affectation, apparently, but rather a way to keep the fingers dry for better thumb grip, which creates better backspin. Kids still name their best shooters. At Wildwood I heard favorite aggies called things like Harry, Alfie, Bull's-eye, Carmel and Sunset.

Backed by tourney's playing rings, Heather Maloney, 11, of Upper Darby, Pennsylvania, displays shooters.

Marbles: an ancient, honorable game

Just about every contestant in 1987 had one thing in common: their shooters were aggies, that is, real stone agates, and were precisely measured at the tournament so as to conform to the exact ¾-inch maximum permitted. Agates are mostly made in Germany and India. There was heady talk of covert sources and inflated prices. "We had to pay $6.50 for one," said Ralph Reber of Fleetwood, Pennsylvania, a few hours before his son Chad, then 11, won the 1987 Boy's Championship using an agate shooter.

Nobody has the vaguest idea when the first marbles rolled across the Earth's surface, but small stones, deliberately chipped and rounded, have been unearthed at Stone Age digs on three continents. Today, marbles from ancient Rome and Greece are honored in places like the British Museum and New York's Metropolitan Museum of Art. "Cherry Pit," a game of marbles, is mentioned in Shakespeare; marbles appear in a Pieter Bruegel painting and are referred to by such lofty folk as the Roman poet Ovid. Early settlers in the New World found the Indians playing marble games with what archaeologists now refer to as "game stones."

In America, marbles did not reach their peak of popularity until the late 1920s and the '30s. Cheap and plentiful, they were an ideal Depression toy. Marbles seemed to be everywhere. At the Century of Progress International Exposition in Chicago in 1933, the Master Marble Company of West Virginia housed its exhibit in a building constructed of five million marbles held in place between thick sheets of glass. At the 1939 New York World's Fair a special championship tournament was staged by rival Marble King, a marble-manufacturing company formed by self-proclaimed "Marble King" Berry Pink (opposite).

Pink had left Princeton to join the Navy in World War I and created his own company in the 1920s, after failing at other ventures. A born promoter, he spurred the industry to a 5,000-percent overall increase in sales in the next seven years. By 1938 Pink boasted that his company had produced enough marbles to give 50 to every boy in the country. But he was always jittery about the market. One year, when it looked as if a girl might win the national championship, Pink was in agony. If she won, he reasoned, boys all over the country might claim marbles was a sissy sport and give up playing (and buying).

Pink owned a marble supposedly taken from King Tut's tomb and he liked to talk (correctly or apocryphally) about Early American marblers—kids named Washington, Jefferson and Adams. He never missed a chance to link marbles to kids who lived honestly. "The only larceny in their hearts," he said of marble players, "is the temptation now and then to inch up for a better shot."

In the early 1950s the Japanese introduced the new "cat's-eye" marble to the American market, a clear marble with colored vanes in the center, and this challenge sent U.S. marblemakers reeling. Things got so bad that a bill was introduced in Congress to protect the American marble industry.

Beginning in the late 1950s, however, there were signs that the old game was on the wane, and marbles was being played mainly under tournament sponsorship or with adult patronage on playgrounds. A decade later Los Angeles and Chicago canceled their city tournaments for lack of cash, contestants and publicity.

Proud 1940 winner is crowned by heavyweight champ James J. Braddock; at right, marblemaker Berry Pink.

"For keeps" game in a back alley, 1892, was solemn occasion; even then, losing one's marbles was no joke.

Today there are only five marble factories in the United States: three in West Virginia; one just outside that state in Reno, Ohio; and another in Ottawa, Illinois. Since the 1970s the retail market has been dominated by imports from Mexico as well as the Far East, and though players buy some marbles, manufacturers rely on clients who use them for everything from crafts to floral decorations. Marbles serve as the agitators in aerosol paint—that clicking you hear when you shake the can—and as filtering agents in some sewage-treatment plants. They are even useful as submarine ground cover in fish-hatchery spawning beds because they provide added surface for roe to cling to. They are used in balloting (many a blackball has been cast in the form of a black marble). They used to be embedded in highway signs as reflectors and have been used by prospective house buyers to "marble check" the degree to which the house has settled unevenly. (You drop a marble on the floor and see where it ends up.) Funeral directors have been known to throw marbles under coffins to help slide them into narrow crypts. Then there was the old snorer remedy that called for a marble to be sewn into the back collar of the miscreant's nightshirt—the idea was to keep him from sleeping on his back.

In 1969 marbles made headlines when the Federal Trade Commission moved against a soup company and its advertising agency for putting marbles in soups featured in TV ads. Clear glass marbles were being used to prevent the meat and vegetables in the soup from sinking to the bottom of the bowl, thereby, said the FTC, "giving the soup the appearance of containing more solid ingredients than it actually contains."

If there is an irony in the decline of marbles as a childhood pastime, it is the increase in the value of marbles as grown-ups' collector's items. Stanley Block of Trumbull, Connecticut, founder of the Marble Collectors Society of America, claims there are about 20,000 serious collectors nationwide. The MCSA has its own newsletter, publishes its own books and in 1981 presented a collection of 340 select examples to Smithsonian's National Museum of American History.

Some of the most beautiful marbles are handmade swirls once imported from Germany, glass globes holding, as one collector put it, "a twisted spiral of filaments, thin music translated into colored glass, crimson with pale blue, fire with canary, emerald with rose." Others are china, both glazed and unglazed, decorated with tiny flowers and geometric designs. There are multicolored glass marbles called end-of-day marbles because they were supposedly created in 19th- and early 20th-century glassworks by factory workers for neighborhood children out of material left over at the end of the day. Then there are the rarities of quartz, granite, tiger eye, topaz, jade and jasper, as well as the common clay, crockery and limestone marbles once counted in the millions and now practically as scarce as hen's teeth.

At the very top of the collector's hierarchy, worth more than their weight in gold, are two very different

Recently, glass artists have created clearer, larger, more complex designs like angel fish-seashell marble at the center. Others are (clockwise from top left), patchwork, pink with mica, millefiori, modern Lutz.

The 100,000 machine-made marbles shown here packed in jars, and the six games (worth about $1,000), are a small part of the extensive marble collection of enthusiasts Bertram and Arnold Cohen of Boston.

kinds of marbles not produced in sizable numbers since before World War I. One, known as the Lutz, has a special swirl and one or more bright gold bands. It is named for Nicholas Lutz, a great glassblower and designer who in the late 19th century worked for several glass companies including the famous Boston and Sandwich Glass Company in Massachusetts. According to Dennis Webb, coauthor with Mark Randall of *Greenberg's Guide to Marbles*, the "gold" isn't gold, it's nothing but finely ground copper, and Nicholas Lutz did not make them; "mostly they were imported from Germany."

Paired with the Lutz marbles as the most desired collector's items are sulphides, those clear glass marbles with a figure embedded inside—sometimes a bird and occasionally such things as hippos or busts of people like Abraham Lincoln and Queen Victoria, or even a tiny train. Because some air always got between the figures and the surrounding glass, the figures have a hazy, silvery look that is most pleasing to the eye.

Real marble rarities pursued as assiduously as First Folios of Shakespeare are fairly recent and machine-made. Eagerly sought, for example, are glass marbles imprinted with the faces of comic-strip characters like Orphan Annie and Betty Boop. These were created by the Peltier Glass Company of Ottawa, Illinois, and sold in the late 1930s. They are scarce today because, relatively speaking, only a few were sold. Besides, at the price of 25 cents for a set of 12, they were originally too expensive for most kids to buy.

Since the late 1970s, too, craftsmen have been creating marbles as works of art never meant to roll in the dirt. The result is a fantastic array of totally new styles (though not new shapes) as well as new twists (and swirls) on some classic designs. Among the most spectacular are those of Josh Simpson (p. 102) of Shelburne, Massachusetts, who encapsulates fanciful heavenly bodies in glass globes, often with satellites, asteroids and even spaceships around them.

Anyone who doubts that a marble-collecting craze has taken hold should drop in at the annual show held by Marble Collectors Unlimited in Amana, Iowa, where collectors from more than 25 states converge to swap and buy and gossip. Immense lots of common marbles

Working with molten glass, artist Simpson uses wooden tools soaked in water to keep them from burning.

are heaped in large boxes and bags on the floor. Rarer specimens are arrayed like jewels in velvet-lined display cases. The trading begins in motel rooms several days before the official exhibit and sale.

At last year's tenth annual MCU gathering the stakes were high enough to give this boy mibster of the 1940s future shock. A Michigan man getting rid of his collection boasted that he had sold $11,000 worth of marbles in the first hour. Collectors are always on the lookout for a marble in what they call a "wet mint" condition—meaning so perfectly unblemished and shiny that it looks as if it were covered with water. The words "$5,000 marble" were heard often in lines like, "If that is a $4,000 marble, this is a $5,000 marble." If someone had actually paid that sum for a marble in Amana—or anywhere else—it was kept quiet. However, one marble did sell for $4,100—a mint-condition, gold onionskin Lutz, 1⅝ inches in diameter. The man who sold it, Jerome Mischke of Crofton, Nebraska, called it the "Golden Beauty." Two months later in Anderson, Indiana, an extremely rare mint sulphide with both a lion and a dog brought $4,200.

In their own way, other prices at Amana were as remarkable ($300 for a marble with the Cracker Jack logo on it, presumably a prize from a box of the popcorn candy). Concern was expressed that prices had risen too high too fast. Not long ago, in 1973, a marble expert was able to write, "collectors are not averse to paying as much as $50 for mint specimens."

The crowd at Amana is not a young one and many of them clearly made their very first acquisitions in the dirt, in a "for keeps" game. Collectors are glad of the disappearance of a marble game called Conqueror, in which contestants throw one marble at another to see which will break, but it is hard to find anyone who does not regret the decline of marble playing among the young.

They glumly tend to blame it on changes in the nature of childhood itself. "It was something kids did together on their way home from school," says Stanley Block of the MCSA; "most kids don't walk to school anymore." A popular marble game—variously known as Hit, Span, Curbs or Snake in the Grass—from the era before milk started coming in cardboard cartons was, in fact, played while walking along.

Collector Bertram Cohen thinks it has something to do with safety, and points to photographs in his collection showing kids playing marbles in the street. (Indeed, in one tragic accident in 1980, three Florida girls were killed when a car ran over their roadside game.) Others point to affluence and the lure of electronic after-school diversions. There is also the theory of a shrinking supply of essential, hard-packed dirt, succumbing to asphalt and even to grass. "Those lawn fescues and miracle grasses," one man said disgustedly, "they even grow in full shade."

The news is not all bleak, though. A generous sponsor, Creative Athletic Products Inc., of Des Moines, Iowa, manufacturer of a new game called Marble Mania, has come forth to insure there will be at least one more National Marbles Tournament. That means enough money to promote the event and to allow contestants to register for a week in Wildwood for only $100, room and board included. Tournament director Gene Mason also plans some special events. Among them, gathering together 75 or so living champions from the past, the oldest in his late 70s, the youngest, 12, a deadly shooter who, because winners are not allowed to repeat, may be the youngest retired national champion anywhere.

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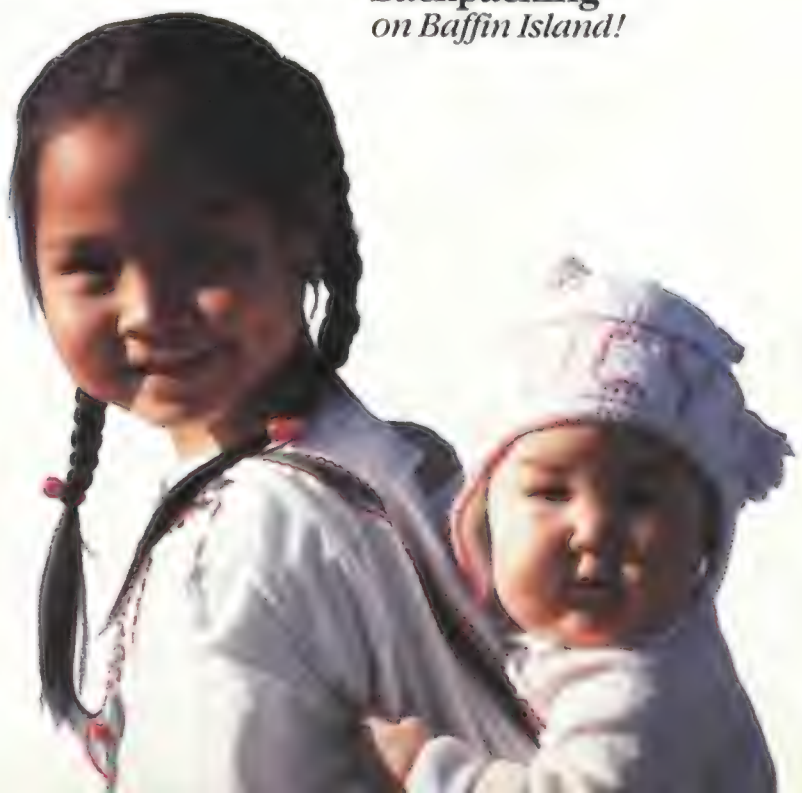

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The World Next Door

By Jake Page

Clear-cutting the tropical rain forest in a bold attempt to salvage it

Applying the lessons from island biology, a major ecological study will determine areas required to sustain Brazilian preserves

Talk about topsy-turvy.

The goal of the enterprise is, ultimately, to save the rain forests of the tropics. The biologists are standing in the searing equatorial heat, dark stains on their soggy shirts. Stretching away in nearly every direction is destruction. A war zone. Tree trunks lie in disarray awaiting the torch, a blanket of corpses punctuated by jagged stumps covering gentle slopes and lowlands.

A few miles south, coarse green grass has begun to grow up among the stumps. Small herds of Zebu cattle had stared indifferently with African-mask countenances as the biologists had driven here over a dirt track in rattletrap trucks and four-wheel-drive vehicles. This place is a ranch, a *fazenda*, aborning a little more than 2 degrees south of the Equator and about 50 miles north of the city of Manaus in Brazil—an area that recently had hosted unbroken stretches of one of the most diverse ecosystems on the planet, the Amazon rain forest. Now great patches are being systematically clear-cut.

But the rancher is having labor problems: work has stopped. Rob Bierregaard, a tropical biologist and ornithologist, becomes impatient. He rounds up a chain saw, waggishly affixes to it a decal of the World Wildlife Fund's panda emblem and proceeds to hack away at the tall trees.

That was a few years ago, although fundraisers still cringe at the thought of that decal. Today the biologists

Loren McIntyre

Pristine habitat is disappearing as Amazon land is cleared for development, in this case with fire.

Rob Bierregaard carefully frees a dove from a mist net during census of bird species in a study tract.

Photographs by Stephanie Maze

Clear-cut answers to a tropical dilemma

Susanne Page

A parrot investigates the hat of Thomas Lovejoy, who conceived the study of how big a preserve must be.

—Americans with the World Wildlife Fund (WWF) and Brazilians working for the National Institute for Research on Amazonia (INPA)—are hoping that a lull in Brazil's typically feverish economy will soon end so the ranchers can get back to work yet again, cutting down more rain forest so that, in turn, the single largest conservation-ecology study ever mounted can continue.

Tropical biologists do not normally show delight in the midst of a clear-cut rain forest, much less collude with the clear-cutters. They among all people are too aware of what such a loss means. But this group is taking the long view. Bierregaard purposefully took up his heretical chain saw to help speed the eventual isolation of a patch of forest, one of many that range in size from 1 hectare (about 2.5 acres) to 100 and even 1,000 hectares. It is all part of a study that will help settle some complex questions in ecology and in the process provide a key to preserving at least some of this fast-disappearing resource. No one knows how rapidly tropical rain forests are vanishing but it is generally accepted that we are losing each year enough to cover the state of Minnesota.

The idea for this study popped up fully formed (like an eco-Athena) from the brain of Thomas Lovejoy, then vice president for science of the World Wildlife Fund (and now an Assistant Secretary of the Smithsonian Institution), a few days before Christmas in 1976. Today, well after the fact, it can be seen as a natural confluence of conservation need, scientific question and Brazilian law: an opportunity for a prepared mind. Part of the economic plan for the Brazilian state of Amazonas, of which Manaus is the capital, called for the creation of large cattle ranches in the forest. The law decreed that, in clearing away forest for pasture-land, 50 percent of the forest had to be left standing.

The scientific question, briefly stated, had arisen from the ecological study of islands and extinction rates: How big must a tract of rain forest be to maintain its biological integrity?

Clear-cutting has isolated this small stand of natural forest; it will quickly lose its original composition.

The conservation need was obvious. The press regularly reverberates with warnings about the loss of tropical rain forest. A recent anxiety is that these forest ecosystems, ranged around the equatorial portions of the globe, are important carbon sinks—there is a lot of carbon in a tree trunk—and if this is released by burning to form carbon dioxide, it will hasten along the greenhouse effect that in turn will melt the icecaps as the Earth's atmosphere heats up, raise the oceans at an even greater rate than they are already rising (a foot a century) and scramble the climate, turning continental breadbaskets into arid plains.

Tropical biologists are mindful of these untoward practical effects. They are deeply concerned about the concomitant loss of genetic diversity—and not just because of the material hazards involved, such as the loss of as-yet-undiscovered pharmaceuticals or foodstuffs. In fact, there is no word strong enough to describe

Virginia free-lancer Jake Page has made several trips to Brazil. His latest book, Songs to Birds, *will be published in the fall by David R. Godine.*

Rob Bierregaard

the ache that biologists experience as these forests are razed. Lovejoy calls the tropical rain forest the world's greatest "expression of life."

To preserve such places, however, is a practical matter involving politics and, importantly, scientific certainty. Developers tend to ignore arguments from emotion or esthetics. The idea of Lovejoy's study is to create little, big and bigger islands of rain forest, ranging from 1 to 10,000 hectares. Biologists regularly census each tract before and after it is isolated and compare the results with plots of similar size in the unfragmented natural forest. To date, in four connected *fazendas*, there are five 1-hectare isolates, five of 10 hectares and one of 100, with more of each planned, along with two 1,000-hectare plots and one of 10,000. The goal is to watch the islands degrade—to observe which species leave or die out, and in what order—with a view ultimately to discovering the minimum critical sizes reserves must be for given species to survive. The project is now some eight years old and expected to run until 1999. It will continue to produce answers well into the next century, but even now the findings emanating from the *fazendas* are suggestive.

A wilderness preserve or a wildlife refuge is, in a sense, an ecological island, and a nation bent on creating lasting wilderness preserves may be wasting its time if the preserves are simply too small to retain their character. Governments like that of Brazil want to know exactly what they should do. Early studies on real islands (as well as on mountaintops) have shed some light on this subject, showing that the smaller the island, the greater the rate of extinction tends to be. Because islands don't suddenly happen with any regularity, however, you can't really be sure what was there by way of species in the beginning or through history, or how they interacted with their environment.

One far-off hope of the Minimum Critical Size of Ecosystems Project is to provide, if not formulas that can be used for other ecosystems, at least the confirmation of some general principles. The goal, in fact, is to make this kind of ecology a predictive science.

In the meantime, keeping track of the species of plants and animals in their growing number of "islands" is a Herculean task performed by an astonishingly small number of biologists. At present only INPA Director Herbert Schubart and two other people are on the paid, full-time professional staff, but so dramatic is the project in scope that its roster of visiting

Herpetologist Barbara Zimmerman dos Reis snoozes during the day at field camp, 50 miles from Manaus.

Biology interns Summer Wilson and Peggy Cymerys help Bierregaard scan the forest understory for birds.

investigators during half a decade is like a biological honor roll; additionally the troops swell in summer to nearly 50 strong with students from universities in Brazil and the United States. An early commentator, Princeton tropical biologist John Terborgh, said: "It's exciting to think that anyone would even try anything so grandiose," adding that the project is so massive that "it verges on the undoable."

Yet it is being done. Locally it is often referred to as "Projeto Lovejoy," but it is a joint venture with the Brazilian government. The site in Amazonas was chosen for several reasons but chiefly because two hours away in Manaus is INPA. Located in what first strikes one as a remodeled motel in the middle of the city, INPA is a research David faced with a Goliath. It is full of cluttered desks, drawer upon drawer of rapidly accumulating biological specimens, a few enclosures outside for assorted mammals and reptiles, and a certain joie de vivre found only among people who are both dedicated and overworked.

One of the earliest researchers on the project was Judy Rankin de Merona, a University of Michigan botanist now on the INPA staff whose responsibility is nothing less than the trees in the forest. In the Amazon, she explains, "10 hectares will support 300 different tree species. That's 10 times what you find in a typical temperate-zone forest." Rankin de Merona spends a lot of her time in the forest walking around with her head tilted back, staring into the canopy. She knows an astonishing number of trees on sight and rattles off their Latin names to a visitor like a hostess introducing friends to a stranger. On her field trips, she is trailed by one or more *mateiros*, or woodsmen, men who have grown up in the forest or on its edge.

When Rankin de Merona spots a tree that she cannot readily identify from the ground, a *mateiro* wraps a leather strap loosely around his ankles to provide leverage and shinnies up the tree, some 40 or 50 feet in a matter of seconds, returning with a leaf and flower sample to be pressed and kept as a specimen for identification.

While Rankin de Merona looks into the tree population, other creatures must also be assayed. This can be done by sampling representative locations: placing traps and nets on specific transects of the island-to-be, and making extrapolations from what is caught. Butterflies can be lured into nets with the likes of rotting fruit and favored plants; other insects will wind up in ultraviolet prisons, in tin cans set in the ground or in what are called malaise traps, which work on the principle that some insects fly upward at any sign of danger. Mammals, including 8 kinds of marsupials and 11 rodents, can be snared. Birds fly unwittingly into mist nets, strung up in extensive lines across known or suspected flyways. These are extremely delicate nets that would be suitable for a ghostly brand of volley-

Zimmerman dos Reis and her brother-in-law, Juruna Ocirio, inspect a frog on a nocturnal foray.

ball; the birds become entangled and wait with what looks like patience to be released, a complaining mate often hanging around nearby. Those that frequent the canopy at heights of 100 feet or more must simply be counted by observation.

Birds are the special interest of Rob Bierregaard, who was until recently field director (he is now back in Washington, D.C. as senior scientist and overall WWF project director). He began early as a naturalist, developing a consuming interest in fossils as a boy. Pursuing his interest through school and to Yale University, he served for a while as "computer jockey" for Tom Lovejoy, who was at the time doing his PhD fieldwork in Amazonian ornithology near Belém, feeding information back to Yale. After a nonscholarly stint spent "killing a lot of bluefish," Bierregaard got his PhD from the University of Pennsylvania.

In the field, Bierregaard is often the first awake, setting off in the dark to make a dawn patrol of the mist nets or simply to lie on his back in the forest and drink it in. At the nets at first light, this brawny halfback of an ornithologist delicately extricates the birds from the mesh, calling out their scientific names to an assistant before banding them and letting them vanish again into the forest. By 1987, some 20,000 birds had been handled, many of them two times or more—a total of 39,000 nettings for a single study, surpassing Lovejoy's PhD work when 25,000 were netted.

Once such censuses are done—and one of the deadlines involves the schedule of the rancher—then the destruction begins. The trees are felled by the Amazon version of migrant workers. It is extremely dangerous work with trees falling at a stupendous rate. Later, once they've dried out a little, the trees are given the torch and fire rages over hundreds of hectares in a matter of hours, filling the sky for miles with a thick, yellow smoke; the Armageddon sun comes and goes, a bruised and wan source of light.

The INPA staff must often participate in the pyrotechnics. Alerted to a burn, project workers head out from Manaus to set their own fires, in this case fire lines to protect the precious isolates, just as firefighters do in our national forests. The complicity is always seen as ironic.

"You've got to suffer if you want to sing the blues," offers Bierregaard philosophically. "And you've got to lose trees if you want to know the forest."

Early on, the scientists began to see specific results. After isolation, for example, a one-hectare plot of forest would soon gain more than twice as many understory birds as it would usually have. With their habitat eliminated, they naturally flocked to the remnant, turning the normal noise of the place into a cacophony of squawks, screeches and chirps. After about six months, there would be a precipitous decline.

In such a habitat, there are what are called behav-

When feasible, specimens like this green snake are brought to camp to be photographed, returned to wild.

ioral guilds of birds. Some are ground feeders, others specialize in the life around fallen trees. Some eat fruit and some are obligate ant-followers. In the labyrinthine ways of life here, the ant-following birds—woodcreepers, for example—depend entirely on the forays of army ants to flush other insects such as grasshoppers, crickets and cockroaches. In 10-hectare plots the colonies of army ants, which in their periodic movements range over as much as 30 hectares, couldn't survive; deprived of the flushed insects, the birds also vanished. Such plots were also, expectedly, too small for large mammals like peccaries, which went off in search of other territory. After they left, there was no animal around to create wallows that hold water; as a result, three species of frogs that depend on standing water also disappeared.

Yet other creatures (less-obligate ones, it might be said) simply changed habits. When crowded, flycatchers forage on lower levels than normal. A kind of mouse opossum spends its time in the canopy under normal circumstances. But in isolated plots, Jay Malcolm, whose beat is the largely unknown mammal fauna, found that this omnivore migrated to the ground and became more insectivorous.

Patterns of life can change swiftly in the tropical rain forest and few effects of isolation were so quickly apparent as what biologists call the "edge effect." One day, as we picked our way through the tangle of fallen logs toward a ten-hectare plot, Judy Rankin de Merona announced: "There. See that? There's a really good edge." About 200 yards off was the long straight perimeter of the forest fragment. And indeed, even at that distance, one could see the dense tangle of vines and new trees that formed the edge. Closer up, one could see hundreds of little butterflies.

Suddenly bare to the sun and wind

The rain forest is a soggy place. The humidity seems total; within seconds one's shirt becomes a damp rag. It is also dark. High overhead, the canopy screens out most of the sunlight. If a rainstorm comes up, it may be ten minutes before the rainwater finds its way to the ground. Things are very different when a sharp edge is caused by destroying the surrounding forest. Sunlight pours in where it had rarely been glimpsed. The humidity drops. Relatively dry, hot winds blow on trees and soils that had never felt a breeze. Second-growth plants are quick to take advantage. What is surprising is just how far *in* the edge effect occurs. One- and ten-hectare plots, it has been discovered, become completely edge in a matter of months.

Tree-fall around the perimeter occurs at rapid rates, mostly because those trees are now exposed to strong winds, but also in part because of the extremely rapid degradation of the soil. The soil is already poor: most of the nutrients of the forest are not to be found in rich soils like those in temperate forests, but tied up in the trees themselves. Leaves fall from the trees at a constant rate, then are rapidly decomposed by insects, bacteria and fungal organisms, and reabsorbed into the trees themselves. In the thin, sandy soil of the tropical rain forest, it doesn't take much of a change in such things as soil moisture or temperature to cause life-changing results for the shallow-rooted trees.

One obvious finding from the early years of the project is that in setting aside a forest preserve one has to leave an adequate perimeter as a buffer zone, perhaps hundreds of meters wide, so that the edge effect can take place and still leave a sufficient core of virgin rain forest.

Back in his Washington office, which is adorned with three South American Indian spears and a hammock-size bird's nest drooping from the ceiling, Bierregaard holds up an impressive red binder, thick with pages. "So far the project has produced these 40 scientific papers. Actually that's not very many for an ecological project that's been going on for eight years. But then, there aren't many projects where the first eight years are merely the preliminary stage."

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Some things go slowly in the larger tracts. Even after five years there is not a great deal of difference to the naked eye, besides the edge effect, in a 100-hectare plot. Bierregaard wanted to know if a computer could see differences the biologists could not. He fed the INPA computers codes for each of the 45 most frequently netted bird species in different-sized plots, along with data on the numbers of nettings. The computers could always tell if they were "looking" at an isolated plot or a patch of undisturbed forest, and they could always tell how large each isolated plot was.

The biologists have played with corridors as well; one of the principles in laying out reserves is to maintain corridors of usable habitat between them, whenever possible. They had left a corridor running to undisturbed forest when they isolated a 100-hectare plot in 1983. After a year, they found that the obligate ant-following birds were still there, still being trapped in the mist nets. One possibility is that as individual birds died, they were replaced by others from the corridor—a persisting, if changing, population. Another is that the original population disappeared at once, but others were using the isolated tract, coming and going via the corridor but not living there full time. When biologists cut a narrow strip across the corridor, the ant-followers vanished almost immediately.

Once the Brazilian economy heats up and the ranchers get under way again, they will isolate another 100-hectare plot, this time with no corridor, and then the biologists may find out exactly what is happening with the ant-followers. Meanwhile, the value of corridors is considered proved; without them, "several gears in the ecological machinery are missing," says Bierregaard.

Brazilian researcher compiles data from species surveys in a control plot that has not been isolated.

Graduate student Rita Mesquita examines fruits of a strangler plant in study of its seed dispersion.

It remains to be seen just what the right size is for a wilderness area of Amazonian rain forest. Even a 10,000-hectare plot probably will not be large enough to maintain a jaguar population. (John Terborgh has guessed that it would take a minimum of 500,000 hectares to maintain a genetically viable jaguar population, given their usual territories and the matter of inbreeding.) But even when the people at INPA discover the actual minimum critical size, it has been said, then all they will be able to suggest to governments like that of Brazil is that the minimum be saved. Lovejoy retorts that without knowing the minumum size even governments with the best of intentions will be likely to set aside *less* than the minimum.

Contrary to popular understanding in the United States, some Brazilians are bent on saving what they can of the rain forests. About 15 years ago, a man named Paulo Nogueira-Neto was appointed the Brazilian equivalent of the U.S. Secretary of the Interior. A determined conservationist, he began with two assistants and three desks. In his 12 years in office, he arranged for Brazil to set aside areas for the preservation of rain forest habitats that are, all in all, almost equal to the land area of Connecticut. He is a major supporter of the project in Manaus.

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The optimism arises from other causes as well. Late last year Lovejoy left the World Wildlife Fund to join the Smithsonian, but he has lost none of his passion for the project. It will continue to be the focus of his own research efforts. In Washington earlier this year he listed some of the benefits of the project. It already has provided training for 100 Brazilian students of rain forest ecology, ranging from people who have helped with birdbanding to others who have gone on to get master's degrees from their work there. "In a sense, the project is helping to create a new generation of conservation-minded scientists in Brazil—clearly a plus. We just added up the numbers the other day. I had no idea we were that far along."

All of the isolates are now preserved for the future by presidential decree. The larger areas, long-term data producers, will continue to change for as long as a century and a half. But more important is that they fit data from the project into a wholly new conservation strategy.

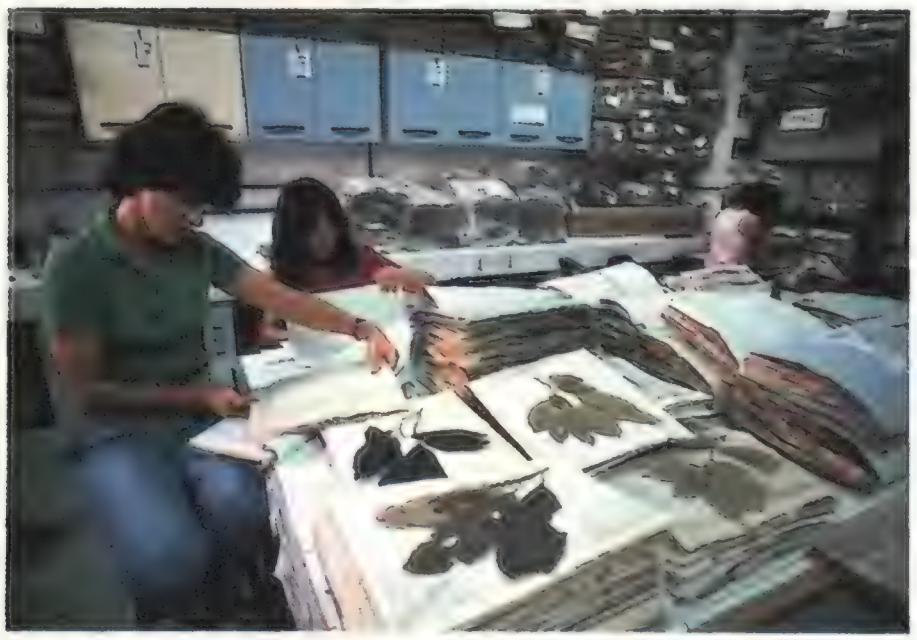
"Conservation," says Lovejoy, "has traditionally been a static, defensive affair. The idea has been to put a fence around it and it'll stay that way." Even the smaller plots, those that have degraded quickly and have mostly given way to the edge effect, hold practical value for the future. "But suppose," Lovejoy says, "you've got an area that is only 10 percent of whatever the right size is. That means that in time you'll end up with only 50 percent of the original species diversity. But that gives you decades before the end result happens, before you're down to 50 percent. You've still got plenty of time to get your hands on the surrounding area and regenerate the forest."

Regenerating what Lovejoy himself has called the "most complex ecosystem that we have yet found in the Universe" seems like pie in the sky. But not, he points out, if you look at the entire watershed of the city of Rio de Janeiro. In the 19th century, it was almost wholly denuded of forest, but then encouraged to regenerate. Now it is in a form similar to the original—not as rich and complex, perhaps, but nevertheless a recognizable rain forest. And the project's islands of forest will themselves serve as "seeds" for the eventual recolonization of the *fazendas.*

Meanwhile, data accumulates at INPA. In Manaus, biologists come and go. Marina Wong, who has worked in Malaysia and at the Smithsonian's Tropical Research Institute in Panama, took Bierregaard's place as field director. And Manaus remains a place of optimism—characteristic of all frontier towns.

Back around the turn of the century Manaus boomed, the ebullient creature of the rubber industry. The rich sent their shirts to Paris to be laundered and they built an opera house of astonishing ornateness and sentimentality. Sarah Bernhardt performed there once. Then the rubber business moved to Asia and the town went bust. Today, it is a tax-free zone and electronics firms are moving in, setting up shop in the shadow of the opera house. Overhead, thousands of vultures circle endlessly in the sky, dark reminders of impermanence.

It is dangerous to promise too much in such matters, but rarely have gloom and despair produced much by way of progress. "We've been managing the planet for a long time now, mostly by neglect," says Lovejoy. "Now we simply have to learn how to intervene properly and to manage it positively."



Judy Rankin de Merona, a botanist who has examined 35,000 trees, studies pressed specimens in Manaus lab.

To study food habits of the rain forest's tree-dwelling mammals, grad student Jay Malcolm sets live trap.

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By Donald Dale Jackson

Lead on, McGruff, and—'take a bite outta crime'

With some gravel-voiced lines provided by his adman originator, America's favorite law-and-order dog is really having his day

The scene is the Chrysler Building offices of the Saatchi & Saatchi DFS Compton advertising agency, one of the world's largest. It's late on a Monday afternoon. The group in the tenth floor conference room, a sanctum devoid of charm except for the four-foot-long dollar bill on one wall, is predominantly young, late 20s and early 30s. The men wear shirts open to the second button, the women are in slacks or long skirts. They're the creative team, the writers and art directors and filmmakers for the project at hand, an antidrug video aimed at schoolchildren.

The lone gray panther in this nest of yuppies sits at the end of a long table; he wears a black sweater, a bow tie and the alert, expectant expression of an actor in the wings. Jack Keil, a creative consultant at the agency and until recently executive vice president, is at 65 twice as old as anyone else present, but he's 65 going on 14. Keil walks with a stoop as if pitched forward by the weight of his formidable nose. When he speaks, which he does often and well, his eyes brighten as his slight body hunches forward and his fingers massage the air. The stoop and his somewhat diffident manner are deceptive. Jack Keil runs five miles a day, plays tennis with demonic abandon, works pretty much nonstop, and all in all is one of the most nimble-minded and outrageous parties on Madison Avenue.

At the moment he's launching into a run-through of a script he helped write for his best-known current creation, McGruff the Crime Dog, the animated spokeshound for the national crime-prevention campaign. An agency creative consultant, lecturer and author, Jack Keil has practically made McGruff his alter ego.

"We open in McGruff's office, a no-nonsense room with desks, stacks of papers and posters on the wall which talk back because it's a magical office. . . ." In a few seconds Keil is doing McGruff's growly voice, as he does on the "take a bite outta crime" commercials that have become celebrated all over the country. Moments later he is acting the parts of two chickens, then a horse, a coyote and a lamb. Then he is reminded of his Uncle Boyd, the family contortionist, who became president of the New York State Bar. "Boyd used to walk up the stairs on his hands," he says. "Drove my grandmother crazy. He carried things on his feet. Sometimes he would tip his hat with one foot."

McGruff, the hero of this minidrama, is a friendly, wise and soulful-looking character who wears a belted trenchcoat, checked pants and soft-soled shoes. In radio and TV commercials, print ads and billboards he dispenses crime-prevention tips and advice designed to help people overcome their fears by taking positive action, such as locking their doors regularly or starting Neighborhood Watch programs. Since his birth in

In working costume, complete with furry paws and a rumpled trenchcoat, McGruff, ready to give advice, assumes a typical watchdog pose in front of Keil's Hudson River Gothic house in Grandview, New York.

Photographs by Enrico Ferorelli/DOT

Before he was perfected by Keil and his team, McGruff evolved through various canine incarnations including (from left) Keystone Kop, a pugnacious deputy dog and J. Edgar Dog in cop's hat and badge.

1979 McGruff has become the Smokey the Bear of crime prevention, a symbol recognized by a vast majority of America's children and a correspondingly large number of adults as well. Policemen and teachers use McGruff as a centerpiece in anticrime and antidrug presentations. As a cultural phenomenon McGruff has joined the elite in the animated kingdom; he's up there with the likes of Snoopy and Bugs Bunny as well as Smokey. He's done a guest spot on the TV series *Webster* and he's even on a postage stamp, which is not bad for a 9-year-old dog.

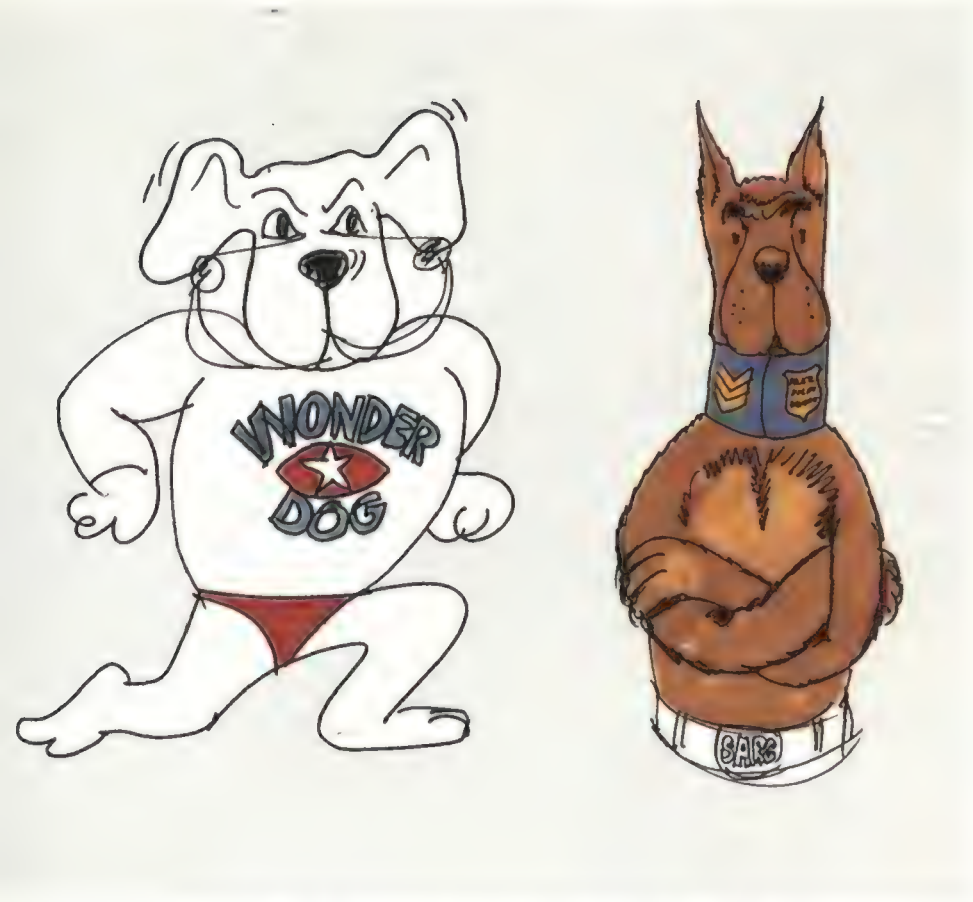
But only a small circle of the crime dog's intimates know that McGruff the crimefighter and Keil the master adman are, in fact, one. They don't just speak with the same voice, they are partial to the same music, share the same foibles and adhere to the same upright all-American values. "Jack's more like Will Rogers than Lenny Bruce," says Gary Susnjara, chairman of Saatchi & Saatchi DFS Compton's New York office. "He's paternal like McGruff. They even walk alike."

"We once had a meeting with an animator who had heard McGruff's voice but didn't know it was me," Keil recalls. "He said, 'You know, that dog's voice is tired, he's seen a lot.' So he put bags under McGruff's eyes. Then he said 'He's got a nasal sound' and he made his nose bigger. He made him a little stooped. I left the room. People wouldn't look at me."

Keil and McGruff also share the same doggedly optimistic belief that things are eventually going to work out. "Jack is enthusiastic. He believes that things can be done, that we can help—and that's McGruff," says Elenore Hangley of the Advertising Council, the public-service arm of the advertising industry that helped originate the crime-prevention campaign. Keil pleads guilty to optimism and modestly acknowledges that he is McGruff's alter ego, but one thing bothers him: "You know I write books, I've even been called some kind of creative guru; I created the McGruff campaign and I'm proud of all that, but when I die, you know what? If they remember me at all, they'll identify me as the voice of McGruff. I'd prefer to be known as his father."

The parallels between Keil and McGruff go only so far. Keil is taller, smiles more, dresses more colorfully, tells an occasional X-rated story and is clearly more of a raconteur—indefatigable, in fact—than the dog will ever be. Keil also has a range of talents the hound has yet to demonstrate. He plays drums and blues piano, sings now and then with a jazz band called the Smugtown Stompers, paints with watercolors. His latest book about creativity is called *How to Zig in a Zagging World.* More than anything else he is an actor, which is in fact what he started out to be. "I wasn't great at any of these things but I was pretty good at all of them.

The author, who writes on subjects that range from tunnels to oysters, grew up in California and does not remember wanting to be a dog or a policeman.



Wonder Dog seemed too silly; Sarg Dog, named for a beloved pet, was too fierce; but the roughed-out

McGruff, houndlike and suitable for down-to-earth advice and Columbo mannerism, proved Mr. Rightdog.

When I put them together it made me ideally suited for advertising." A certain controlled wackiness probably helped too. "Jack is not a logical man," observes Susnjara, "and I say that as a compliment."

Keil grew up in Rochester, New York, and was midway through a high-profile career at the University of Rochester (cartoonist, athlete, author-star of the college musical) when the Army Air Corps called in World War II. He survived 50 missions as a bombardier on a B-24 Liberator based in Italy before returning to college and a fling at the New York stage. He auditioned unsuccessfully for a role in *Mister Roberts* and played bit parts on TV. "I was a French violinist one week and a maharaja. If you spoke a word your salary doubled. As a maharaja I said 'Wonderful!' and I was paid $30 instead of $15." When Broadway spurned his advances he took a public relations job in Lancaster, Pennsylvania, and then began writing copy for a small ad agency in New York, free-lancing as a comic-book cartoonist on the side. "My heroes were usually named Buzz or Biff and I did several episodes of *Larry Jet, Air Cadet.*"

In 1964 he became a copywriter and creative supervisor at Dancer Fitzgerald Sample and began to focus his talents on television commercials. Working for such clients as Hamm's beer, Cheerios, Life Savers, Toyota, Rival dog food and Gold Medal flour, he directed a series of campaigns marked by the peculiar Keil brand of inspired daffiness. A sequence of commercials for Rival ("a little bit of doggie heaven") focused on the strange disappearance of the company's "flavormeister," Alfred Hinkley, who when he reappeared, disclosed that he had been learning to communicate with dogs. When a dog barked, Hinkley obligingly glanced at his watch and replied, "Quarter to five." A spot for Gold Medal featured the revelation by fictional astronaut Brad (Skip) Wheelwright that the moon was covered with Gold Medal spongecake, which explained why moon travelers bounced when they walked.

Keil clearly has fun in his work and even more fun telling stories about it. The bear story, for example. His team at the agency came up with the idea of a bear as a symbol for Hamm's: man and bear, mashing ferns side by side in the land of sky-blue waters. They found a reasonably compliant young Kodiak bear, a trainer and a place in California's Trinity Alps country where they could shoot. But then . . .

"Everybody was ready to go, except the bear and the trainer hadn't shown up. The airlines wouldn't take the bear and we were shelling out $30,000 a day or so, even though we were staying at Gert and Ed's housekeeping cabins. Finally we got word the bear was coming in a van with the trainer and a handler. They pulled in about four hours late, and first the trainer and then the handler got out of the van moaning, gasping; they sounded terrible. They said the bear had been carsick for 318 miles. The bear went down on his back with his feet in the air and just lay there.

Poster designates a McGruff preoccupation, the need for safe houses for city kids to take refuge in.

"We started shooting next day. The secret was marshmallows. Earl the trainer would drop marshmallows and the bear would follow him. On the second day we were shooting the bear beside a stream and he suddenly leaped into the water and caught something. We thought he had a beaver. He was crunching away, thrashing and going crazy, and it turns out he was eating his own paw. So now we have a limping bear. The bear rode in the jeep with Earl, just sitting there in the front seat looking around. Some guy passed them on a cycle and went right in a ditch. . . ."

Keil's life is a long-running performance interrupted sporadically by reprises of previous performances; the actor and musician in him are usually onstage. "If there are four people in a room Jack does a show," says his accomplished and forbearing wife, Barbara. "You get everything with him," says film producer Anne Kurtzman; "words, music, gestures—the works. Jack doesn't just read a script, he attacks it."

His workroom in the Keils' rambling, white house 100 feet from the river in Grandview-on-Hudson, New York, contains a bass drum and a set of watercolors, as well as a word processor and a McGruff doll reclining on a chaise. Downstairs are a piano and a large collection of jazz records. "I'm one of the few people extant who know the second verse of 'I Wish I Could Shimmy Like My Sister Kate,' " he says. Jack is constitutionally unable to listen to his latest McGruff commercial, which features a snappy, semibluesy antidrug ditty of his own composition called "Users Are Losers," without tapping his feet. When he craves solitude in his office he closes the door and flicks on a Wild Bill Davison tape.

Showing people the way to fight back

In recent years Keil has taken his act on the road, speaking to various groups around the country on the care and nurturing of creativity in business, a subject he explored in anecdotal style in his 1985 book, *The Creative Mystique.* The crime-prevention drive that McGruff symbolizes began with a feeling shared by several business, labor and government leaders in the late 1970s. Crime was victimizing and frightening many Americans, and most people felt nothing much could be done about it. With the support of the Justice Department and the National Council on Crime and Delinquency, the Advertising Council proposed an ad campaign that stressed citizen involvement and practical community action as the way to fight back.

Much of the law-enforcement establishment was at first profoundly dubious. Police were skeptical about the willingness of Americans to shed careless attitudes about protecting their property or to obey the campaign's advice that they lock their doors and leave the lights on. "Most of us used to discourage citizen involvement," says Lt. Kevin Barry, chief of the crime-prevention unit for the Danbury, Connecticut, police department; "the philosophy was you solved crime by putting more cops on the street." The Ad Council took aim at this dogma, proposing to turn it around.

When the Ad Council zeroes in on a cause, it selects a volunteer agency, which designs and runs the ensuing campaign gratis. In this case the council chose Dancer Fitzgerald Sample, and the agency assigned the job to Keil. "Pro bono work is a guilt-washer in one sense," he says. "But you also have more freedom than you do in commercial jobs."

Keil cruised the Upper West Side of Manhattan in a police car at night, pursuing perpetrators and absorbing the cops' conviction that public self-protective co-

The Ultimate Passage Through The Ultimate Passage.

P&O Group
British Registry

"Royal Princess, the Panama Canal and the Caribbean. What a combination."

Gavin MacLeod

Experience the most celebrated engineering feat of the century on the most celebrated ship of the decade. All outside staterooms. Many with private verandas. Elegant lounges. Gourmet cuisine. Original Broadway-style entertainment. And friendly Princess service.

Save $400 per couple.

Book under deposit by July 31, 1988. Fly free on all 10 or 11-day cruises from Acapulco and San Juan. Fall, winter and spring. Send in the coupon. Or call your travel agent.

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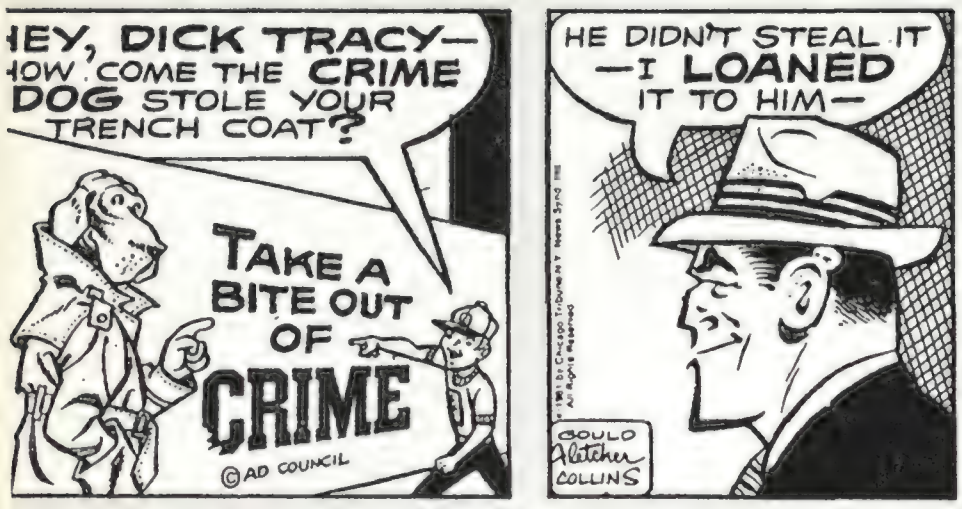
Mail to: Princess Cruises Dept. SMT 0488
2029 Century Park East, Los Angeles, CA 90067

PRINCESS CRUISES
The most famous name in cruising.


IEY, DICK TRACY—
HOW COME THE CRIME DOG STOLE YOUR TRENCH COAT?
TAKE A BITE OUT OF CRIME
©AD COUNCIL
HE DIDN'T STEAL IT —I LOANED IT TO HIM—
GOULD Fletcher COLLINS

Cameo performance on poster in famous *Dick Tracy* comic strip in 1983 was early celebrity appearance.

operation was essential to crimefighting. At this point the goal of the pro bono campaign was to prevent crime by urging sensible precautions and to show that people could actually do something to counter the fear that often spirals beyond cold statistics about neighborhood crime. Keil and company discarded several approaches. "They'd have a crime in progress, then a freeze frame and a sonorous voice delivering the message," he recalls. "We needed a figure to rally around. All the best public-service campaigns had symbols. But we weren't getting anywhere.

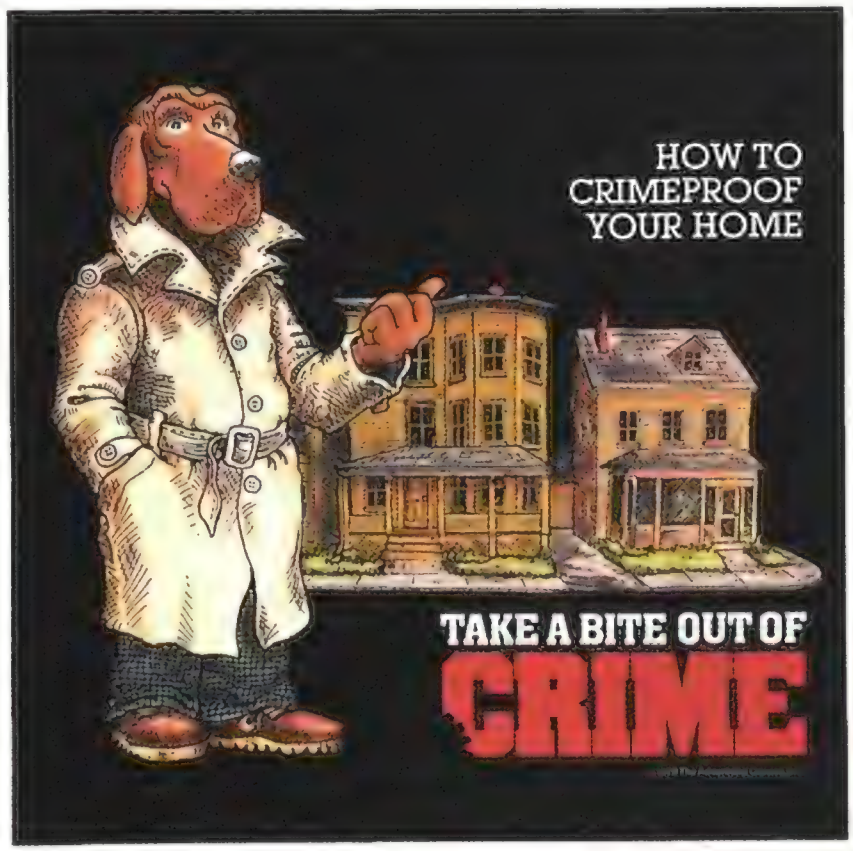
"Then came a day when I was flying home from the West Coast, trying to think up a slogan—crush crime, stomp on crime. And I was thinking of animal symbols—growling at crime, roaring at crime. But which animal? Deer and rabbits, though likable, were too diffident. Despite the success of Smokey, bears seemed too savage. Cougars have been used to sell cars, but cats, by common consent, are not totally reliable. Birds or fish—forget it. The designated critter had to be trustworthy, honorable, brave. Then I thought, you can't crush crime or defeat it altogether but you can snap at it, nibble at it—*take a bite out of crime!* And the animal that takes a bite is a dog.

"Right about then," Keil continued, "the pilot came on and said we had a mechanical problem and had to land in Kansas City. I sat in a corner at the airport madly sketching dogs and wound up with a Keystone Kop dog that resembled Snoopy. When I got back to the agency everyone liked the idea but they didn't like any of my dogs. I sulked. Then someone sketched Sarg Dog, another did J. Edgar Dog. Finally a copywriter and an art director came up with McGruff wearing a trenchcoat." They had found Mr. Rightdog.

He hadn't actually been named yet (the name came later in a contest won by a New Orleans policeman; the most frequent suggestion was "Shure-lock Bones"), but he was perfect. "He wasn't vicious, not tremendously smart, maybe, but he was no wimp either, he was a father figure or possibly an uncle figure," Keil says. "Your favorite uncle." The dog was at once concerned, authoritative and nonthreatening. He wouldn't punish you. And you could trust him.

But not everyone was immediately sold. Some black leaders objected that dogs symbolized racial oppression. Some lawmen thought a cartoon dog too frivolous for a serious anticrime campaign. Benjamin Civiletti, Attorney General at the time, was among the doubters. When Robert Diegelman, then of the Justice Department's Law Enforcement Assistance Administration, described to Civiletti and an aide the campaign that the department was already funding, the aide pointedly inquired whether the government should finance an animated dog. It sounded like, well, a boondoggle. Diegelman, an important booster of McGruff, retorted, "Would it make any difference if it was a talking fish?" In time, both law-enforcement skeptics and minority groups warmed to McGruff.

With Keil doing the gravelly, raspy voice, the crime dog made his on-the-air debut in a series of radio commercials in 1980. (Beach sounds, splashes and children's laughter, then a woman's voice: "Hey, what's a dog in a crumpled trenchcoat doing at the beach?" "Oh, excuse me, I'm the crime dog; you probably didn't recognize me behind these sunglasses. I just



On TV, radio and in booklets, genial McGruff reminds folks to lock doors, windows, and leave a light on.

When prosperity comes,
do not use all of it.
—Confucius

DISCIPLINE

Good times tempt insurance companies to overreach themselves. Like investors on margin.

Yet bulls and bears are present in every business, insurance included.

When the down side of the insurance cycle comes, insurers often lose their resolve. They chase after volume and fool themselves on reserves, causing rates to fluctuate wildly. Long-term planning becomes impossible for insurance buyers.

Fireman's Fund believes in discipline during good times as well as bad. Discipline means building capital and preserving it so we can provide the necessary insurance from one cycle to the next.

It means writing only one kind of insurance — property and casualty. It means insuring only risks we understand. It means asking a fair price. It means keeping our balance sheet in order.

Discipline also means maintaining a strong relationship with our select group of independent agents. We must prove ourselves to them each day. When they recommend Fireman's Fund, you know they are recommending the best insurer for their clients' needs.

Today we have nearly $10 billion in assets. We are stronger and more disciplined than ever. And though we may not be able to eliminate the insurance cycle, we are making every effort to cushion you from its effects.

FIREMAN'S FUND
INSURANCE COMPANIES
125 years of tomorrows.

© 1988, Fireman's Fund Corporation

wanted to remind you, when you're at the beach don't leave your watches, valuables or wallets lying around. Leave them home or lock them up. That'll help, uh, *take a bite outta crime.*" More beach sounds.)

McGruff did his first TV spot in 1980 urging people to lock up and leave the lights on when they go out. Displaying a winsome fallibility (to err is canine), McGruff was barely able to resist the plate of brownies a negligent homeowner had left on a table. In later commercials, the hound who cares focused on Neighborhood Watch groups, on teenagers as high-risk crime victims and on child abduction ("Ah, that's Jenny." A car door opens. "But that's *not* Jenny's dad"), offering advice and detailed information to anyone writing the National Crime Prevention Council (NCPC), the nonprofit Washington-based organization that took over management of the campaign in 1982.

McGruff's message seemed to connect. A University of Denver survey conducted two years into the campaign found that nearly a quarter of those polled had taken some action as a result of the commercials, such as locking doors and windows, or joining watch groups whose members report anything suspicious in their neighborhoods. Intrepid policemen began to appear at schools and shopping malls in stifling McGruff costumes (later improved by the addition of a tiny battery-driven fan in the muzzle). Teachers used programs based on McGruff puppets. McGruff began popping up all over—as a vocalist with the Blue Pigs police band in Detroit, as a victim of a roast in Washington, D.C. and even as a reveler at New Orleans' Mardi Gras.

Keil, naturally, was in the thick of all this. He sat in for an animated McGruff at a session with Dick Cavett, and donned a McGruff suit for another memorable talk-show interview. But let him tell it:

"I did the talk show in Washington with Mac Gray of the NCPC. When we got there they looked at my costume and said 'Who are you?' and I said 'McGruff the crime dog.' They said we went on between the hypnotist and the hula dancer. Well, the interview starts and I'm admiring myself on the monitor while Mac is talking—how's crime, lots of crime. So I just jumped in and said 'Tell it like it is, Mac' in my McGruff voice. The host was stunned. '*The dog talks,*' he said. He thought I was mute until then. So he asks how I got into the crime game. I said I'd been an Army guard dog and then went to work for a detective, you know, and one day he got sick and I filled in for him and just stayed with it. The host asked what happened to the detective and I said, 'Oh, I feed him and walk him every day.' "

"If there are four people in a room Jack does a show," his wife says. Here, indefatigable Keil acts out a script, providing "everything," as one colleague puts it, "words, music, gestures—the works."

TO A RADAR GUN THEY LOOK EXACTLY ALIKE.

Forget the fact that the car on the left is a legendary performance car. And that the one on the right is a wagon.

A radar gun doesn't notice minor details like that. It focuses on only one thing: speed.

And from that point of view, the Porsche 944 and the Volvo 740 Turbo Wagon look remarkably similar.

In fact, in repeated quarter-mile tests, they came up with virtually identical numbers—both in elapsed time and miles-per-hour. In 0-60 tests, the Volvo wagon actually came out ahead of the Porsche.* Which is no small feat for *any* car. much less a wagon.

It's no wonder *Road & Track* magazine called the 740 Turbo Wagon the closest thing to a five-door sports car.

Which all goes to prove that the Volvo 740 Turbo Wagon is something very rare indeed:

A wagon that's actually worth owning for what it packs up front.

VOLVO
A car you can believe in.

*BASED ON INDEPENDENT ACCELERATION TESTS. © 1988 VOLVO NORTH AMERICA CORPORATION

In office at home, Keil communes with Woof, a canine who knows nothing at all about crime prevention.

The folks at the NCPC who guide and monitor McGruff's odyssey are thrilled about the campaign's impact. "I thought it would have taken 20 years to reach the degree of awareness we've reached in 9," says marketing director Mac Gray. "Keil is a big part of the reason." Adds Allie Bird, NCPC program development director, "Instead of preaching to the kids he makes it cool." A recent survey showed that in addition to the myriad children who now know the crime dog, more than half the adults polled have taken action of the kind that McGruff calls for to prevent crime. Says an admiring adman, "Anyone in our business would love those kinds of numbers."

Because McGruff is amusing as well as useful, television and radio stations annually provide him with between $40 million and $50 million worth of free air time. Income from licensed McGruffery—dolls, puppets, doormats, Frisbees—ballooned from $1,500 in 1984 to a hundred times that in 1986 and is still rising. In part due to McGruff's urgings, more than 19 million Americans are now involved in Neighborhood Watch programs. In some neighborhoods the burglary rate has declined by as much as 60 percent. "I think McGruff and crime prevention have become synonymous," says lawman Kevin Barry. Some children have told costumed McGruffs or McGruff puppets about incidents of abuse they never mentioned to parents or social workers. "It's amazing what happens when you put that suit on," Keil says. "The kids hug you and want to hold onto you. If you take off your paw to sign an autograph, their faces fall."

As the Justice Department and the Ad Council intended from the outset, the protect-yourself theme has gradually faded and is being replaced by a help-each-other message. " 'Watch out' has been joined by 'help out,' " says John Calhoun, executive director of the NCPC. "If you just 'watch out' you can wind up isolated behind double locks. Crime feeds on isolation. So we want to promote things like escort services for people who work late, drug- and alcohol-abuse programs for kids." The affable McGruff has also contributed to a thaw in police-community relations. "We encourage citizen participation nowadays," Kevin Barry points out. "People will flag down a cop just to talk. It's not like it was when we were 'pigs.' "

Such successes might spoil a lesser dog, but McGruff's handlers make sure that he lives up to his image and his responsibilities. The shape of his head (long), his height (at least five feet five), the length of his coat and other details are spelled out in precise guidelines. Spin-off McGruffs must remain the McGruff we all know and love. Earlier in his career he occasionally stepped out of character, donning a sailor suit for a Navy poster and water skis for a travel brochure, but such youthful follies are now behind him. When Hawaiians wanted to put him on a surfboard the answer was no. "We don't know what his arms and legs look like," Elenore Hangley explains.

McGruff's managers have also kept him focused on crime prevention despite the temptation to branch out into other equally worthy causes—cancer research, for example. "If he becomes too much to too many he becomes nothing," Mac Gray believes. In 1986 the NCPC politely rejected a request to draft the crime dog to "take a bite outta birth defects."

Like many celebrities, McGruff permits a few carefully orchestrated mysteries to persist about his private life. "He has no first name and no rank. He may be an ex-cop, Third Precinct maybe, but I'm not sure," Keil

says helpfully. His breed, also undetermined, appears to be in the basset-bloodhound neighborhood. Does he have a tail? Is there a Mrs. McGruff? A photograph of a female appeared on his desk in one drawing, but it could just as easily have been Mother McGruff. "I think he lives alone," Gary Susnjara submits, "without much social life. No sex. But he's happy."

His creator and voice partner is happy, too. Keil's most recent McGruff commercial is by general consensus the best yet, featuring a piano-thumping McGruff and a chorus of elementary school children singing "Users Are Losers" ("If you know a user even part of the time—one, two—tell him to quit, take a bite outta crime"). The commercial marked McGruff's debut on the antidrug front. Jack wrote the lyrics in a weekend. "You keep it simple with kids that age," he says. "You don't put your fingers in a flame, you don't eat yellow snow, you don't use drugs. We shot it in the rain in Memphis with 120 kids. We filled up a warehouse with crayons and trail mix for them. The mothers smothered them with blankets whenever we took a break."

Keil is an adman's adman, without apologies, but he acknowledges that there is a difference between selling cereal and pushing crime prevention. "In my business I've helped make millions for a lot of folks," he says. "But when you think of the possibility that McGruff saves lives, or helps reduce crime, there's no comparison. I think we've made a difference and it makes me feel terrific."

Not long after the Memphis shoot, Keil was in Florida regaling an audience of college students with tales of the advertising world. He told the bear story. He paced back and forth and tickled the air. He did a half-dozen accents and several animals. He showed a number of his commercials, including a Toyota spot boasting that one model could hold five people plus a "man named Murray." He mentioned McGruff and got a hand when he showed "Users Are Losers." When he was through, a professor gave him a plaque. "Will this get me tenure?" Keil asked.

An hour later he was sitting with some friends at a restaurant and working on his Japanese accent when someone asked the waitress if she'd ever heard of McGruff. "Are you kidding?" she replied. "I've got a kid in the fourth grade. The crime dog!" "Well, this man is his voice," someone else said, indicating Jack Keil. The waitress extended a napkin for an autograph. Keil rolled his eyes and furrowed his brow. "Take a bite outta crime," he growled.

As McGruff, Keil meets a small fan. "Kids hug you and want to hold onto you," he says. "If you take off your paw to sign an autograph, their faces fall."

DATAPRO PBX USER SATISFACTION STUDY

	Northern Telecom	NEC	AT&T	ROLM
Overall Satisfaction	1	2	3	4
Most Frequently Recommended System	*1	[illegible]	4	2
Training	1	4	3	2
Documentation	1	4	2	3
Attendant Operations	1	4	3	2
Installation/Cutover	1	2	3	4
System Management	1	[illegible]	[illegible]	3
User Operation	◆1	◆	[illegible]	2
Hardware Reliability	1	[illegible]	3	4
Maintenance/Service	2	3	1	4
Troubleshooting	1	2	[illegible]	
Systems Performed as Expected	1	4	[illegible]	

[illegible]

◆ [illegible] *[illegible]

Courtesy of Northern Telecom © [illegible] Telecom

THE FACTS SPEAK FOR THEMSELVES

The Northern Telecom Meridian* SL-1 was rated Number One over NEC, AT&T and Rolm in Datapro's PBX user survey. Nine out of ten Meridian SL-1 owners said they'd recommend it to another business—the highest satisfaction of any of these systems. No surprise, considering what nearly everyone is saying about the Meridian SL-1:

"Overall leader Northern Telecom took a blue ribbon in [reliability, service, installation and support]." *COMMUNICATIONS CONSULTANT MAGAZINE*

"One fantastic PBX—with an incredible reputation for logic, reliability and constant improvements." *TELECONNECT MAGAZINE*

"Editor's Choice. Connecting a PC to the Meridian [SL-1] is a real pleasure." *PC MAGAZINE*

Because it's made by Northern Telecom, the Meridian SL-1 has a sure future. The one you own today can always be upgraded with the latest features, so you're ready for anything. Ready for Integrated Services Digital Networks (ISDN) and Meridian Customer Defined Networking. Ready to grow smoothly from 30 lines to thousands.

All the facts lead to one conclusion: the Meridian SL-1 is the best business phone system you can own. Call 1-800-328-8800.

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meridian sl-1

NETWORKING

Rough-hewn and impetuous Andrew Jackson was already a hero when he attacked Spanish-held Florida.

Jackson (on white horse) won national renown by beating the British in the 1815 Battle of New Orleans.

By James Chace and Caleb Carr

The odd couple who won Florida and half the West

The General's invasion outraged Congress and the King of Spain, but the Secretary of State turned the scandal into a diplomatic coup

The Congress knew nothing of the operation. The President later denied that he had ever given it a green light. But the brash American officer who did the deed in the name of American national security claimed he had the full backing of the executive branch of his government. The escapade caused an international furor, indeed an international crisis, and outraged members of both the Senate and the House of Representatives called for investigations. Many congressmen demanded public disavowal by the President and punishment of the officer in question. Just at the moment when such consequences seemed unavoidable, the Secretary of State stepped boldly forward to salvage the officer's name, silencing criticism at home and abroad.

It was the troubled winter of 1817-18. The United States had still not recovered from the War of 1812 with Great Britain, which had bitterly divided the nation and seen the near-secession of the New England states, whose livelihood depended on shipping. Because the British had burned the White House, the Capitol and many public buildings (SMITHSONIAN, September 1987), James Monroe, a forthright if sometimes

But, like Adams, he was convinced the United States was still vulnerable to attack by European powers.

Erudite and intricate John Quincy Adams, the son of a President, had been a diplomat since age of 14.

indecisive Virginian, became the first American President to take the oath of office out-of-doors. The wrangling Congress, meanwhile, was obliged to carry on its often-raucous proceedings in the Patent Office. New England's leaders had been prevented from shattering the American Union during the war only by the eleventh-hour negotiation of the Treaty of Ghent in December 1814, and by the astonishing American victory won at New Orleans under the command of Andrew Jackson a month later.

President Monroe was eager to put his energy and talent to the task of avoiding any new international crises, hoping to mend not only the American capital but also the divided national spirit. Soon after his Inauguration, he embarked on a personal tour of New England prompting at least one observer to predict the start of an "era of good feelings."

Nonetheless, in 1817 two powerful Americans did not share Monroe's desire for a pacific posture at home and abroad. One was Andrew Jackson, an ambitious general and bellicose frontier nationalist whose driving obsession was the security of the United States. The other was the country's new Secretary of State, John Quincy Adams of Massachusetts, son of a President, America's foremost diplomat and a man whose ascetic, intellectual lifestyle stood in sharp contrast to that of the whip-wielding slaveholder, Jackson.

Adams had headed the American negotiating team at Ghent, barely winning a stalemate. As the architect of the victory at New Orleans, Jackson was well aware that he had simply smashed one badly led British army, doing little to change Britain's global reach and strident grasp. The border and trade disputes that had originally helped force James Madison into declaring war against Great Britain were still unresolved. So it was that in the early months of the Monroe Administration, Jackson and Adams shared an overriding concern for the nation's security. As they saw it, despite the war, the United States of 1817 was every bit as vulnerable as the United States of 1812.

As depicted in the fairly rough maps of North America of the time, the area that preoccupied both men was that sizable tract of land south of the border, whose outline resembled a massive, threatening pistol

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President James Monroe waffled over what to do about General Jackson.

—the Spanish provinces of East and West Florida (see map, page 154). The butt of this pistol was the peninsula of East Florida, a largely swampy region with a long and strategic coastline. The pistol's trigger guard, the valley of the Apalachicola River, then the boundary between East and West Florida, was made up of some of the best farmland in the Southeast. And its barrel, a long strip of fertile land slicing under Alabama and Mississippi, pointed menacingly at the Mississippi River, the most coveted commercial artery in North America.

Adams and Jackson held that without control of these provinces, then filled with hostile Indians, runaway slaves, foreign adventurers and duplicitous Spanish officials, there could be no real territorial security for the United States, and no safe process of westward expansion, let alone a secure export route through New Orleans. Spain, though officially bound by the Pinckney Treaty of 1795 to restrain Indian tribes and British adventurers from raiding American settlers over

This article was adapted from authors Chace and Carr's America Invulnerable: the Quest for Absolute Security from 1812 to Star Wars, *just published by Summit Books.*

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the border, had neither the will nor the troops to do so. For decades, Spanish governors of Florida had allowed runaway American slaves to live just inside its borders as free farmers or members of the friendly Creek and Seminole tribes. To an unapologetic slave owner like Jackson, this was an outrage. Adams was personally repelled by slavery. But as Secretary of State, he was alive to foreign threats and plottings, and could not allow American laws to be ignored with impunity by a neighboring power.

In their determination to do something about the Spanish Floridas, the two men made a formidable, if mismatched, pair. As a boy, Jackson had seen most of his family die at the hands of the British during the American Revolution. He had enjoyed a wild young manhood as a gambler and duelist. After being admitted to the North Carolina bar at 20, he moved to Tennessee where he created a thriving law practice in Nashville, using his profits to acquire land and slaves. Despite the lack of a formal, classical education, the young Jackson was already a fervent nationalist and an articulate, outspoken supporter of the landed class. By 1798, at the age of 31, he had become a strict justice of the Superior Court of Tennessee. "I have an opinion of my own on all subjects," he later said, "and when that opinion is formed I pursue it *publickly*, regardless of who goes with me."

In short, Jackson in politics was a bit like Jackson in war. By 1817 his celebrity (and his nickname, Old Hickory) had taken on many of the heroic public and private attributes that we still recognize, among them a passionate devotion to his wife, Rachel, who had not been officially divorced when they were first married and whose good name Jackson was ever ready to defend—to the death, if need be. His gaunt body was wracked by the pain of chronic ailments that could only be eased by periods of respite at his famed home, the Hermitage. And his drawn, determined face had become the image we see in portraits today, with its remarkably piercing eyes surmounted by a bold shock of silvery hair. Largely because of New Orleans, Jackson's place among American heroes was assured before he

Adams, fifth from left, confronted the British while negotiating an end to the War of 1812, with a treaty that was an unsatisfactory stalemate.

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Spain's wily Minister de Onís tried to capitalize on the Florida scandal.

turned to the problem of the Floridas.

Not so with John Quincy Adams. He had served his country with equal zeal, but was hardly the type to capture the imagination of the American people. The new Secretary of State had first become a public servant in 1781, at the age of 14, when he served as secretary to the American Minister in St. Petersburg. Since that time, in addition to negotiating the Treaty of Ghent, he had been Minister to The Hague and later to Prussia, then Senator from Massachusetts, then abroad again as Minister—first to Russia and then to Great Britain. Many years spent wrangling with grasping and sometimes-patronizing foreign governments had shaped in Adams a sharply nationalistic political credo. Advocating a strong Union and a firmly nonaligned stance abroad, he had become a force to be reckoned with at home and in every European capital. Now he was preparing to make the United States, as he once wrote, a "nation, coextensive with the North American continent, destined by God and nature to be the most populous and powerful people ever combined under one social compact."

Adams was a linguist and a compulsive reader who nevertheless took time out for rigorous physical exercise. As the nation's scrupulous but not very successful sixth President,

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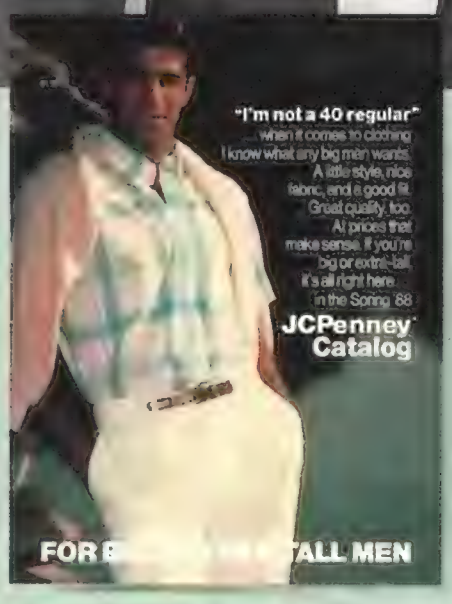
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from 1825-29, he would become famous for swimming in the muddy Potomac, clad in nothing but a bathing cap and goggles. Adams managed to fit two or three days' work into every 24 hours, yet his intricate personality was marked by paradox. America's greatest diplomat, he was also capable of extraordinarily offensive bluntness, sarcasm and open intolerance. He adored the theater but distrusted theatrical folk; loved his children but was a harsh taskmaster to them.

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Like many events in those troubled Spanish provinces, the Florida crisis of 1817-19 was set in motion by murder. In the spring of 1817, the War Department received a message from one of its agents on the Georgia-Florida border saying that the Red Stick Creeks (so called because of their large, red war clubs) had killed a white woman, one Mrs. Garrett, and her two children, and had "commenced their Red Stick dancings, again." In response to the widely reported killings, Gen. Edmund Gaines, the American military commander in Georgia, called a conference of the local Seminole Indian chiefs to berate them. The Indians

Fancifully portrayed Seminole chief "Billy Bowlegs" gave refuge to runaway slaves, escaped Jackson as a result of warning from British.

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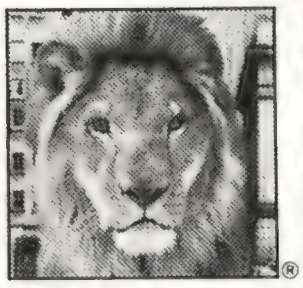

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General Gaines had orders to stop short of attacking Spanish forts.

kept a running account of how many of their people had been killed by whites, and they viewed retaliatory attacks as a fair way of settling the score. The deaths, they explained, were retribution for the recent killing of several of their own.

Gaines accused the chiefs of harboring runaway slaves; indeed of themselves making slaves of the runaways. The Indians told him that this was true; but slavery in a Seminole tribe merely meant the paying of tribute to a chief. Slaves were allowed to farm their own fields and live fairly independently. It was only natural that captive, hard-driven blacks from over the border in Georgia would be drawn to Florida. The longtime friendship and intermarriage of former slaves and Seminoles, the chiefs maintained, was not the business of the white general; controlling murderous American settlers was.

But by fall the Georgia settlers were demanding revenge for the deaths of Mrs. Garrett and her children. And American troops dispatched to the Seminole village of Fowltown discovered something that was far more explosive than murdered whites: British uniforms, as well as other

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circumstantial evidence indicating that British military agents were at work in the area.

Nothing could have been worse for the Seminoles and the Creeks. Incitement of Indian tribes on American borders had been a British method of harassing the United States ever since the Revolution. For months before the Fowltown discoveries, rumors had been flying that Indians in the Floridas were under the sway of British agents, foremost among them Alexander Arbuthnot, a burly, white-bearded Scot who traded not only in blankets and rum but in guns and powder, and Lt. Robert Christie Armbrister, a professional adventurer thought to be training runaway slaves to fight their former masters. The finding of British uniforms in a Seminole village inside the Georgia border so exasperated General Gaines that on November 12, 1817, he had Fowltown burned to the ground. In executing this order, American soldiers killed five Indians. The tally of deaths was again unbalanced.

On November 30, an American lieutenant, R. W. Scott, was taking a party of American women, children and soldiers—most of them ill—by boat up the Apalachicola for treatment at an American fort, when the boat was ambushed. Thirty-four soldiers, along with six women and four children, were killed. Scott himself, or so angry rumor soon had it, was tortured to death. Several days later, another group of boats taking supplies to Fort Scott, 75 miles upriver in Georgia, was attacked and got away only after fierce fighting. These raids were in evident retaliation for the events at Fowltown.

Faced with inflammatory rhetoric and the outrage of its Southern citizens, President Monroe's Administration began to realize that, right or wrong, some forceful response might be necessary. Sentiment, in fact, was growing for a large-scale move against the Indians in Spanish Florida. General Gaines had written Secretary of War John Calhoun, the "poisonous cup of

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barbarism cannot be taken from the lips of savages with the mild voice of reason alone." On December 16, Calhoun sent a dispatch to Gaines saying that "should the Seminole Indians still refuse to make reparations for the outrages and depredations on the citizens of the United States, it is the wish of the President that you consider yourself at liberty to march across the Florida line and attack them . . . unless they should shelter themselves under a Spanish post. In the last event, you will immediately notify this department."

Two weeks later, the President transferred the job to Jackson, still commander of the U.S. Army's Division of the South and a man who had earlier led expeditions against both Creeks and Seminoles. He began to collect volunteers for a long march to the Florida border. The news that Jackson was to lead the American assault prompted the Florida Indians to prepare for a campaign with no quarter asked and none given. Events would prove their assessments chillingly accurate.

Meanwhile in Washington, John Quincy Adams had just opened a series of negotiations with the Spanish Minister, Don Luis de Onís, on the dual questions of the Floridas and the western boundary of the United States. Spain had consistently refused to recognize America's purchase of the Louisiana Territory from France in 1803 and denied all American claims to land west of the Mississippi River. Adams hoped to resolve both issues with de Onís, and to do so quickly, for he realized that the killings in Florida were steadily edging President Monroe toward significant military action—in January 1818, Adams bluntly informed de Onís "that if we should not come to an early conclusion of the Florida negotiation, Spain would not have the possession of Florida to give us."

Late in that month, de Onís offered a plan under which, in return for Spain's formally ceding the Floridas

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to the United States, the Monroe government would agree to limit its western claims to a borderline just beyond the Mississippi. It was an unrealistic offer, given Spain's weakness and America's wholehearted belief in her title to the Louisiana Purchase, which, as negotiated with Napoleon, extended west of the Mississippi into Spanish claims on what is now Texas, New Mexico and Colorado. The negotiations eventually deadlocked. What Adams could not yet have known was that on March 10, 1818, General Jackson ordered all available livestock at the Georgia border of the Apalachicola to be slaughtered, and had issued to each of his men a three-day ration of meat, and one of corn—and then marched into Florida.

Jackson, who inherited Gaines' original orders, almost immediately questioned the limitations they put upon him. In a secret note to President Monroe on January 6, 1818, the general asserted that the "whole of East Florida [ought to be] seized and held as an indemnity for the outrages of Spain upon the property of our citizens; This done, it puts all opposition down, secures for our citizens a complete indemnity, and saves us from a war with Great Britain, or some Continental Powers combined with Spain; this can be done without implicating the Government; let it be signified to me through any channel . . . that the possession of the Floridas is desirable to the United States, and in sixty days it will be accomplished."

In the months to come, this remarkable missive would stir hot debate within the Monroe Administration and in Congress. The question was not what did Monroe know and when did he know it, but did Jackson have Presidential approval when he invaded Florida? Monroe, who was ill at the time the note reached Washington, said that he offered no comment on it at all, but simply passed it along to Secretary of War Calhoun and Treasury Secretary William Crawford. Jackson always stoutly maintained he had received—through channels he did not precisely identify—an unofficial but definite green light. Time has shown both Monroe's and Jackson's claims difficult to prove. But, as anyone who has listened to the recent Iran-Contra hearings can well imagine, in the spring of 1818

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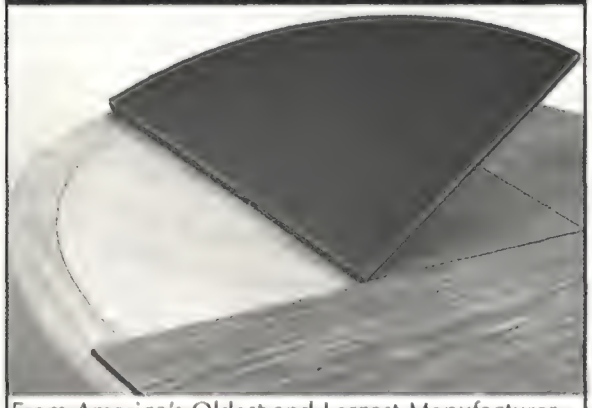

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Military court was split over sentencing of two British agents, Arbuthnot and Armbrister. Jackson executed them both anyway.

among aroused political parties, such considerations were fairly academic.

On March 25, General Jackson wrote Calhoun that the Seminoles to his east had taken refuge in the Spanish fort of St. Mark's. Despite Monroe's instructions, the general decided on his own authority that this was grounds for taking possession of a Spanish military post. On April 6, he took the fort. He then pressed farther east to subdue a force of Indians and runaway slaves operating in the Suwanee River region. The Seminoles there were led by a chief of great distinction, called Bolecks or Bolicks or, more commonly, Bowlegs. But military leadership was left to Bowlegs' head slave, a runaway black named Nero, and to the Englishman Armbrister. The trader Arbuthnot gave a warning to the Indians and Armbrister of Jackson's approach, and when the Americans, now several thousand strong, reached the Suwanee they were faced only by a small force of runaway slaves who were quickly dispersed.

Still, Jackson's men captured Arbuthnot and two Seminole chiefs, whom they lured in by flying a British flag on one of their boats, as well as Armbrister. From him, the general learned of Arbuthnot's warning to the Seminoles, and on the basis of this a special military court was convened in St. Mark's to try the two Englishmen and two chiefs.

The result of the trial was preordained. Despite the fact that the board of 12 officers reduced its initial death sentence to 50 lashes and a year's confinement for Armbrister, it was clear that the Tennessee judge intended to execute his own brand of law. As a "necessary warning" to future Indian agitators, Jackson had all four men summarily put to death.

On May 24, he moved on to occupy the fort of St. Michael's, overlooking Pensacola in West Florida. Well aware of whom he was dealing with, the governor of the province, Don José Masot, retreated to a nearby fort and after firing off his cannon in a gesture of defense, quickly surrendered. Along with all his officers, Masot was allowed passage to Havana, and Jackson appointed one of his own colonels governor of West Florida.

Jackson, for once, seemed to have exhausted even his capacity for creating a furor. By attacking St. Mark's and Pensacola—not to mention ap-

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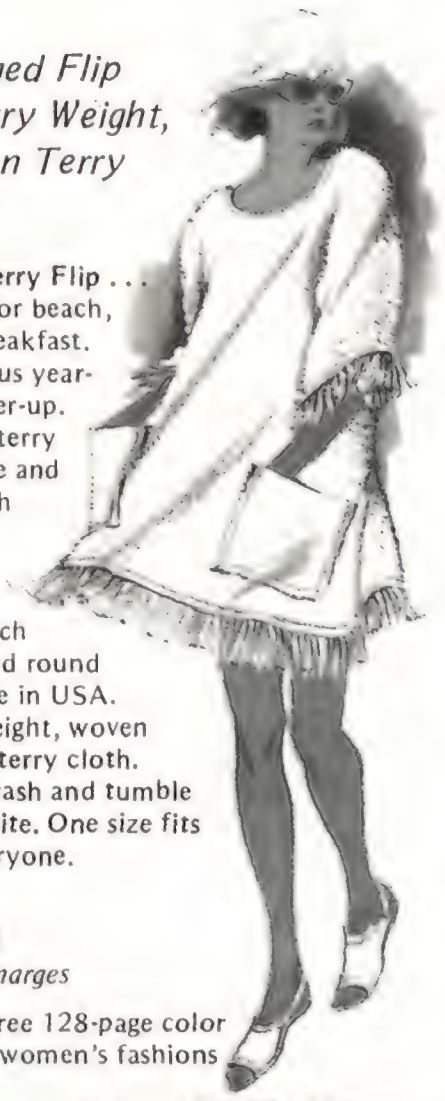

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pointing an American officer governor of a Spanish province—the general had deeply offended the integrity of Spain and insulted the person (or so it would later be said) of King Ferdinand VII. By executing Arbuthnot and Armbrister, he had given good cause to those in Great Britain who favored yet another war with the United States. Through his brutal treatment of the Florida Indians and their chiefs, he had fanned the already strong anti-American sentiments among those peoples. At the end of the month, weary, sick and longing for the company of his wife, he returned to Tennessee.

Much of official Washington was shocked by Jackson's behavior. But Minister de Onís was outraged. The details of the invasion reached the capital in early June, and Don Luis swiftly fired off a stinging rebuke to the Monroe Administration for a perfidious attack made in the midst of negotiations, adding, "General Jackson has omitted nothing that characterizes a haughty conqueror."

While de Onís' indignation was overstated considering Spanish toleration of violence by Indians in the Floridas and the presence there of British agents who trained them, his remarks about Jackson's methods went straight to the heart of the matter. Before the invasion, to be sure, most Americans would have agreed that acquiring Florida was necessary. Yet to acquire this area through an invasion unauthorized by Congress, resulting in the execution of British subjects by a military court, was high-handed and warlike behavior. The action troubled many Americans, including most of the Cabinet and the President.

Monroe saw the reasons for Jackson's invasion but worried about the political uproar it was leading to. Even in his own Cabinet the only support for Jackson came from John Quincy Adams. On July 15, the day the Cabinet first took up the issue, the Secretary of State noted in his diary that the question was "embar-

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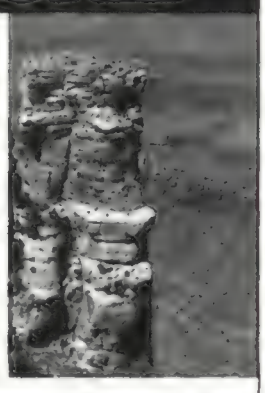

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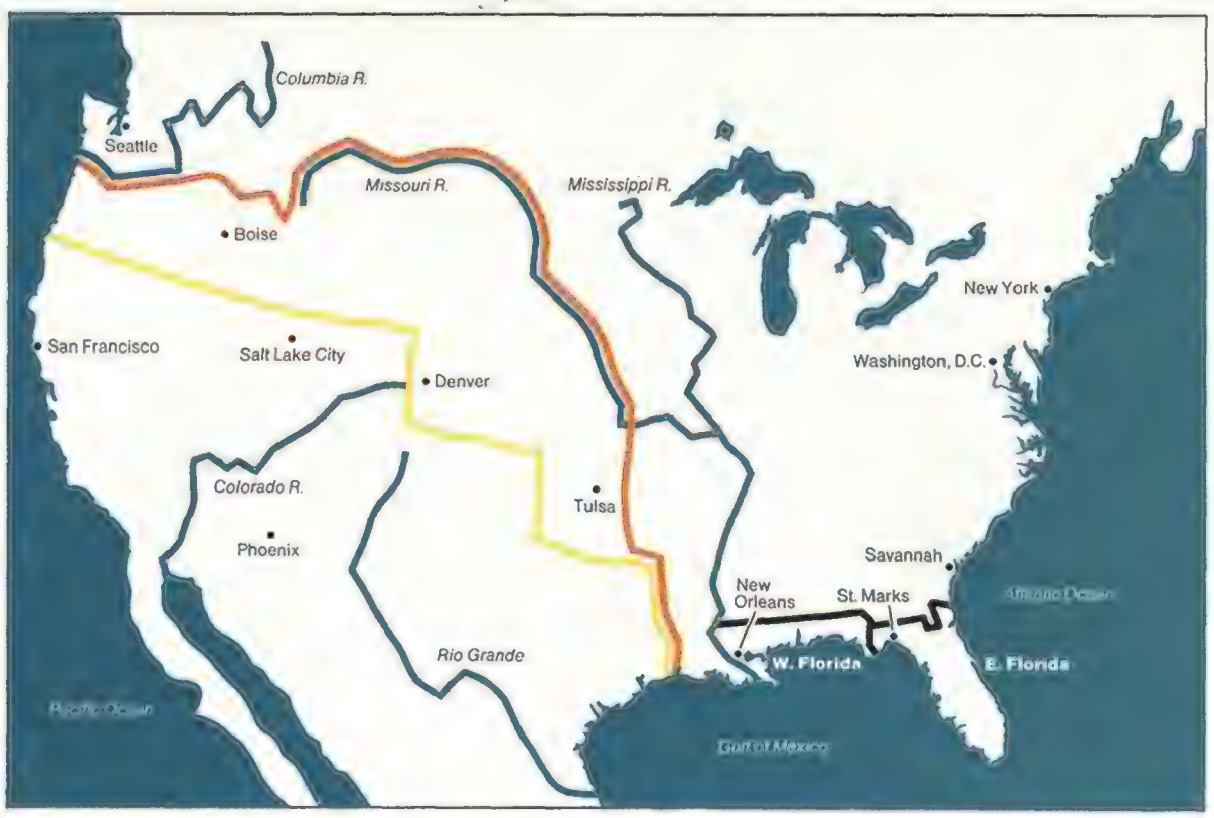

Map shows Floridas and disputed westward boundaries. In 1819 Spain claimed all land below the orange line, finally settled for the yellow line, ceding a way to the Pacific and an area that would become most of seven states. Modern cities are for reference.

rassing and complicated," involving as it did "actual war with Spain" and "the Executive power to authorize hostilities" without a declaration from Congress. "The President and all the members of the cabinet, except myself," he wrote "are of [the] opinion that Jackson acted not only without, but against, his instructions; that he has committed war upon Spain, which cannot be justified, and in which, if not disavowed by the Administration, they will be abandoned by the country." But in Adams' view, Jackson's headstrong "proceedings were justified by the necessity of the case."

The Secretary of State was aware of one issue above all: if the government disavowed Jackson, of whom the Spanish were clearly frightened, the United States' position in the negotiations for a boundary treaty with Spain would be so weakened that Adams' hope of getting a northwestern border stretching all the way to the Pacific would be impossible to obtain. And unfortunately there was no diplomatic middle ground in the issue; Jackson and his invasion either had to be abandoned or supported.

Sensing American disunity and the public pressure on Monroe, the Spanish put forward a set of dramatic demands: the return of Pensacola, the payment of indemnities and, above all, the "lawful punishment" of General Jackson. Despite the Spanish threat to break off treaty negotiations, Adams replied to these demands by making a counterproposal for a western boundary that included a line to the Pacific along the 42d parallel. De Onís was shocked.

Meanwhile, to the President and the Cabinet, Adams insisted that disavowal would not only be a dangerous display of weakness on the part of the nation and of the Administration, it would also be "unjust" because "in principle" Jackson's actions were "strictly justifiable." If Adams' arguments did not prompt Cabinet approval, they at least succeeded in delaying disavowal.

But political pressure for disavowal kept growing. By autumn there was talk of a full-scale Congressional investigation into Jackson's invasion, prompting de Onís to make another boundary offer, strongly restating the

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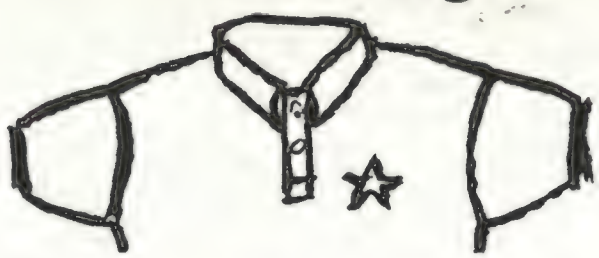

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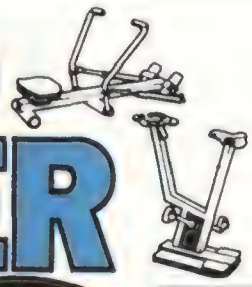

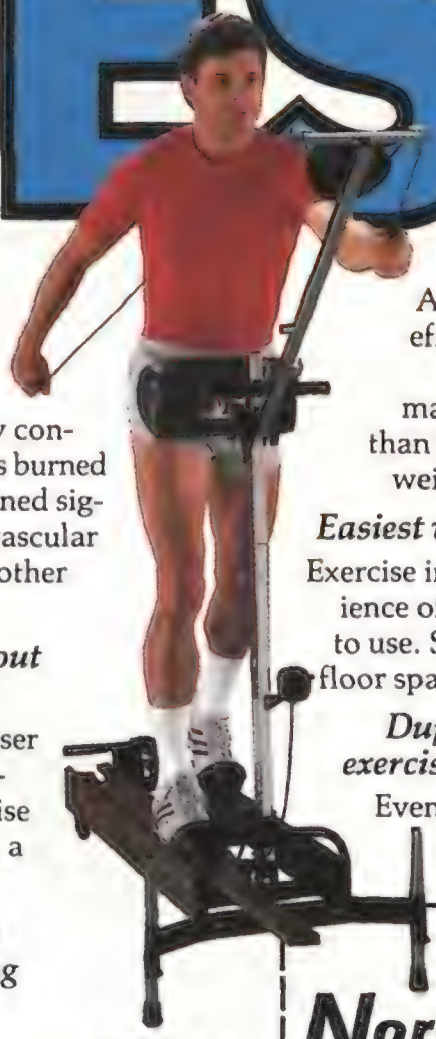

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previous Spanish claims to much of the Louisiana Purchase west of the Mississippi. President Monroe, a reasonable man by nature, found himself at a loss as to what course to pursue. Never fully in favor of disavowing Jackson, Monroe was more and more impressed by Adams' continued insistence that disavowal would mean an end to the prospect of gaining Florida and would cripple the American position in the western boundary negotiations. As President, however, Monroe could not simply ignore the pressures being applied by the Congress and his Cabinet. The confusion and impatience brought on by these conflicting considerations eventually caused the President to turn to the simplest solution: force. He instructed Adams to let it be known to Congress, when it reconvened, and to the Spanish Minister that he had not ruled out the possibility of annexing the Floridas through a formal invasion. A war with Spain at least, and perhaps Great Britain as well, seemed a real possibility.

It was then that, in a single stroke, John Quincy Adams suddenly and dramatically turned the tables on his foreign and domestic opponents. The Spanish government's demand that Jackson be punished had been addressed to the American Minister in Madrid, George Erving, who forwarded it to Washington. Adams' reply, therefore, was also addressed to Erving, who was instructed to deliver a copy of the lengthy note to the court of Ferdinand VII. In addition, copies were sent to other American ministers in European capitals, especially including Richard Rush in London.

Dated November 28, 1818, the celebrated "Instructions to Erving" were the fruit of weeks of work on the part of the Secretary of State. Adams' aim seemed almost impossible. It was nothing less than to deal a mortal blow to the idea of disavowing Jackson's invasion; to show that it was Madrid's and not Washington's position in Florida that was indefensible; and

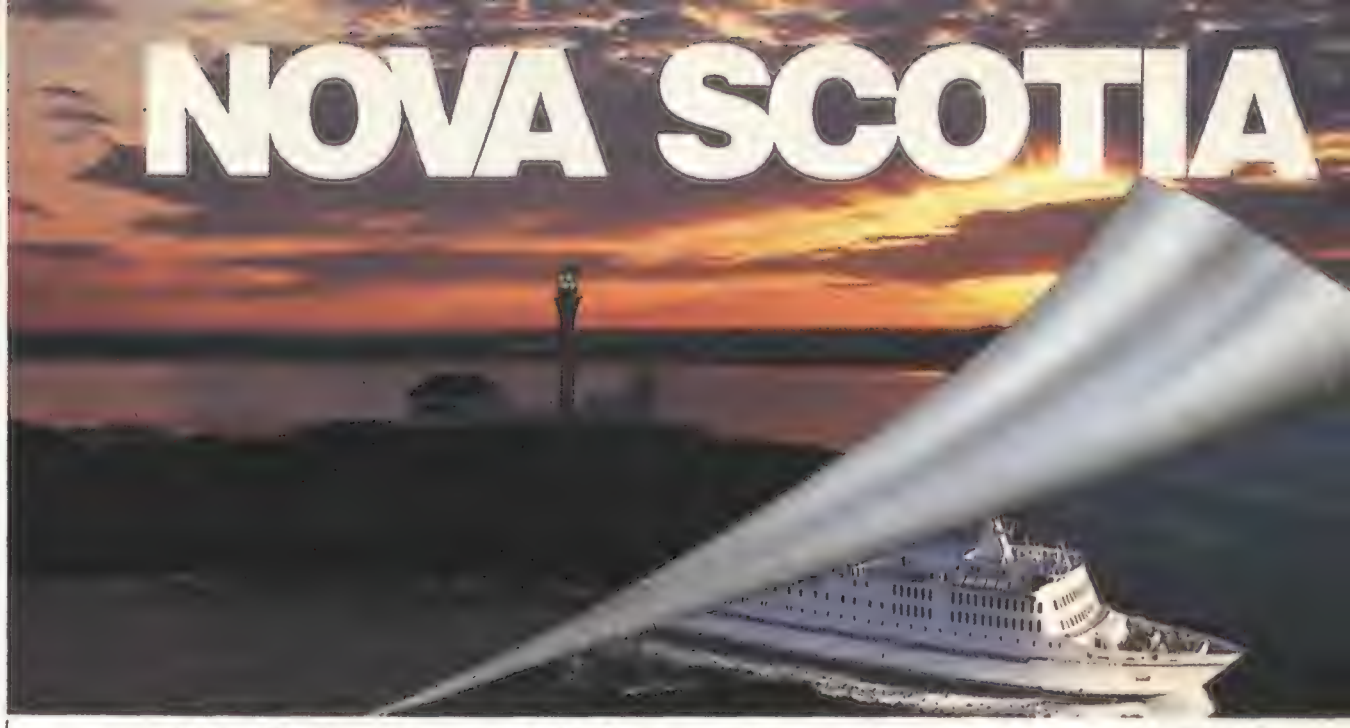
to make it clear to Great Britain that America would actively respond to any British meddling in the affairs of North America. The extent of Adams' success was remarkable.

He began by stating, in a tone of moral indignation, that Jackson's invasion was wholly justifiable on grounds of self-defense against the marauding Indians and their British sponsors, and that punishment of the general was therefore out of the question. As for King Ferdinand's "profound indignation" at having his territory invaded, Adams pointed out that the British had used Florida as a base of operations for years, and asked, "Where was His Majesty's profound indignation at that?"

The Secretary of State saved his strongest language for Great Britain, a nation that "yet engages the alliance and cooperation of savages in war. . . . From the period of our established independence to this day, *all* the Indian wars with which we have been afflicted have been distinctly traceable to the instigation of English traders or agents. Always disavowed, yet always felt; more than once detected, but never before punished; two of them, offenders of the deepest dye . . . have fallen, *flagrante delicto*, into the hands of an American general; and the punishment inflicted upon them has fixed them on high, as an example awful in its exhibition, but, we trust, auspicious in its results."

The document leveled all opposition to the Monroe Administration in the Congress. Richard Rush soon wrote from London to say that the British Foreign Secretary, Lord Castlereagh, was now determined to avoid war with America at any cost. John Adams Smith, John Quincy's nephew and a member of the London legation, reported that "there has scarcely been a pistol flashed since the great gun from Washington to Madrid."

In a bold, and some would have said, outrageously independent style, using closely reasoned argument, Adams had preempted the interfer-



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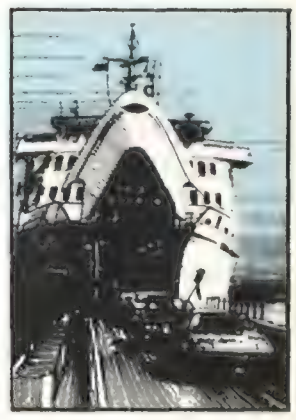

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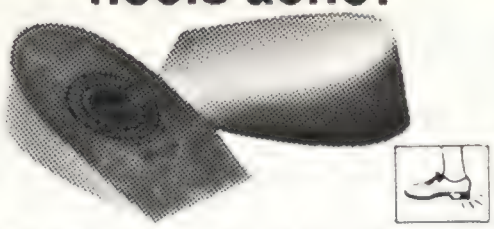

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ence of Great Britain and Europe generally in the affairs of North America. At home, the vindication of Andrew Jackson was complete. Largely as a result of Adams' "Instructions to Erving," both the House and Senate investigations into the invasion of Florida were aborted. The general even embarked on a triumphant tour of the Northeast.

In Madrid, where the Spanish empire suddenly found itself politically isolated, the note sounded the death knell of Spanish procrastination on the issues of Florida and the western boundary of the United States. On February 22, 1819, Secretary Adams and Don Luis de Onís signed the Transcontinental Treaty. In exchange for a sum of $5 million, King Ferdinand transferred possession of all his territories in the Floridas to the United States. The newly defined western border established unchallenged American control over the vaguely named regions that had been bought from France, and included a line to the Pacific along the 42d parallel—now the northern boundary of Utah, Nevada and California. It was the most significant treaty that had yet—or perhaps has ever—been signed by the United States.

Just four years later, John Quincy Adams once more called upon the arguments and eloquent powers that had been fine-tuned during the Florida crisis. It was he who drafted for James Monroe the foreign policy declaration that became known as the Monroe Doctrine—extending American warnings against any European meddling in the Western Hemisphere.

The political alliance between Jackson and Adams forged during the Florida crisis was short-lived, though. In 1824 Adams was elected President, and in 1828 Jackson ran against him in one of the most below-the-belt election campaigns in American history. Jackson's supporters leveled totally unsubstantiated charges of corruption at the Adams Administration, and personal invective abounded. Some of Adams'

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sympathizers made scurrilous charges about Jackson's wife and even his mother. The President had bought a billiard table and a chess set for the White House; Jackson's people called these "gambling furniture" and some of his supporters even accused Adams of pimping for the czar during his residency in Moscow. Adams refused to answer such charges, claiming that to do so would degrade the office of the President. This stance may well have cost him reelection. When Jackson—whose good reputation owed so much to the efforts of the then Secretary of State ten years earlier—arrived for the most riotous Inauguration ever, to begin a term that dramatically extended the power of the Presidency, he found that his spiteful predecessor had slipped out of the White House the night before.

There would be no traditional transfer of power, and rarely another word exchanged, between Andrew Jackson and John Quincy Adams.

Jackson and Adams (far right) attended a ball together in 1824, but fell out after a nasty campaign as rivals for the Presidency.

Could a cat that eats supermarket pet food take this test and land on its feet?

1. Feel skin and coat. Comb your fingers through the hair. Is it:

A. Healthy, vibrant and free of flaky deposits. 30 pts.

B. Dry, lackluster and poorly elastic. 5 pts.

C. Very oily, smelly, or uneven. 0 pts.

There are normal variations in different breeds of cats at different times of the year. However, poor nutrition always adversely affects skin and hair.

2. Inspect mouth. Raise your cat's upper lip to view the teeth. Are they:

A. Clean, white and glistening. 20 pts.

B. Yellowed with signs of residue. 5 pts.

C. Decaying with evidence of tartar. 0 pts.

Diet plays a major role in oral hygiene. If you didn't check A, chances are you feed your cat a steady diet of wet foods, which can result in dental problems. Dry foods help cleanse teeth and gums.

3. Monitor appetite. Does your cat eat:

A. Many times a day from a single serving. 20 pts.

B. Once a day. 5 pts.

C. Once every other day. 0 pts.

Many feedings a day are preferable because it allows for more efficient digestion and utilization of food.

However, if your cat suddenly changes eating habits, consult your veterinarian. It could indicate a health problem.

4. Examine stool. Stool size, consistency and odor are good indicators of a cat's overall well-being. Is it:

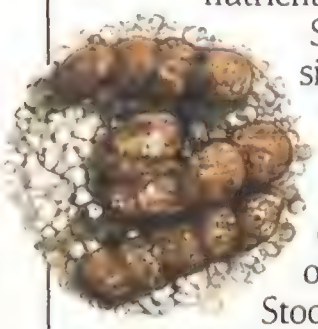
A. Small, firm and free of any unusual substances and odors. 30 pts.

B. Large, hard with an offensive odor. 5 pts.

C. Very large, soft, with an offensive odor. 0 pts.

Stool volume is largely influenced by undigestible foods and enzyme deficiencies.

Small, firm stools demonstrate your cat has properly assimilated all the essential nutrients.



Stool consistency indicates the quality of your cat's source of nutrients. Stool from a poor source may be soft.

A hard stool can represent a mineral or fiber imbalance.

Stool odor is usually traced to grain-based cat foods sold in supermarkets.

If improperly processed, grain-based cereals ferment in your cat's intestines and cause gas and odor.

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Book reviews

Abigail Adams
Phyllis Lee Levin
St. Martin's Press, $24.95

Abigail Adams was born Abigail Smith on November 11, 1744, in Weymouth, Massachusetts. A comet flashed in the sky over Weymouth that month. Until her death in 1818 the peppery, inquisitive descendant of 17th-century founding fathers sparkled and flashed, not unlike a comet, from Boston to Washington, London, Paris. The story of President John Adams' wife is familiar, but too often her heroic qualities are so emphasized that she becomes a stereotype of the devoted wife and mother. Not surprisingly, Phyllis Lee Levin was captivated by the many aspects of Abigail's personality.

In her biography, *Abigail Adams*, Levin goes beyond heroine worship. She underlines the bitterness of self-sacrifice to liberty's demands, the abuse from journalists, the physical and financial hardships served up to Abigail and her family as they moved from their quiet country life to European courts and the Presidential mansion.

Abigail was painfully aware that she, like most women of her day, had received little formal schooling. But she had a quick and hungry mind. She coaxed and bullied husband, sons and male cousins into sharing their learning and experiences with her. She was addicted to letter writing, persevering in spite of delays in mail deliveries, often of six months to a year.

Fortunately much of her correspondence has been preserved. Historians have mined this trove to learn about the personal side of life for the Adams family and for other famous Americans of the Revolution.

Levin has used quotations from Abigail's writings as titles for her chapters. Strung together, they outline Abigail's progression from farmer's wife to First Lady, always observant of the events and decisions that often divided patriots of her day. "Mountains Arise to Hinder Me," sighed the young wife and mother. Left behind in Braintree to cope with farm, children and finances as well as worries about the significance of events in Dorchester, Ticonderoga and Philadelphia, she considered "Ten Thousand Difficulties." Arriving in London in 1784 as the wife of the diplomat who would attempt to mend fences with England, Abigail felt herself "A Mere American." "A La Mode de Paris" is an excellent portrayal of her life in France, the country that inspired Thomas Jefferson and offended Abigail. To her the frivolity, the careless nonadherence to marriage vows, and the practice of a

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religion that seemed to permit one to confess one's sins to a stranger, receive pardon and then rush out to repeat them, were shocking.

Like biographers who preceded her, Levin found it impossible to separate John and Abigail. Short, fat and often tactless, John nevertheless inspired Abigail's endless devotion. Their mutual love and respect qualifies them as one of the outstanding married couples in American history. She was the "ballast" that he needed. At the Continental Congress he didn't act on her oft-quoted request—"that you would remember the Ladies"—but he treated her as his equal, his eyes and ears, his sounding board.

Through Abigail's eyes, Levin shows us the Boston Massacre, the Boston Tea Party, the Battle of Bunker Hill and more everyday problems such as muddy roads that slowed travel, and the 18th-century experience of smallpox inoculation. With Abigail and John we see Benjamin Franklin's casual attitude toward morality. John's blunt criticism provoked many undiplomatic exchanges; he was the first of three generations of whom it was said that "Adamses have a genius for saying even a gracious thing in an ungracious way." Adams on the other hand felt that Franklin's life had been "one continued insult to good manners and to decency."

John and Abigail's disagreement with Jefferson, though sharp, was political; their friendship survived despite injured feelings on both sides.

Abigail constantly pushed her children to work hard, to emulate their father, to achieve. When John Quincy was 44 years old and considering an appointment to the Supreme Court, she wrote him a letter of motherly advice. In spite of poor health, lack of confidence and a typically dour Adams personality, John Quincy Adams (see page 134) served as Minister to both Russia and England, and as sixth President of the United States.

Nabby, the only surviving daughter, was a victim of breast cancer at age 48. Rejecting Royall Tyler, who went on to write the first American play to be produced commercially and then to become Chief Justice of the Supreme Court of Vermont, Nabby married Col. William Smith. Abigail worried because Smith, who soldiered well in the American Revolution, was an improvident husband, becoming involved in adventures that bordered on treason. Nevertheless, he was elected to Congress.

Son Charles died of complications of alcoholism at 30. Thomas, the youngest child, led a less distinguished life than John Quincy.

The price of Abigail's patriotism and ambition was frequent loneliness. More than once John and John Quincy were away for years at a time. She and John were devoted but human. Levin includes several of their written exchanges. Abigail's sharp words occasionally accused John of neglect. John's snappy retorts just as sharply asked his wife to stop complaining.

Professor Jeffrey Hart of Dartmouth said recently in a television discussion that well-written history helps us to commune with people of the past. Phyllis Lee Levin, who has also written about historic houses, parent-child relationships and modern women's problems, lives up to Hart's standards. *Abigail Adams* is candid and perceptive.

Geraldine R. Foty
New England book reviewer

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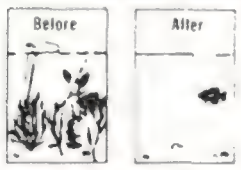

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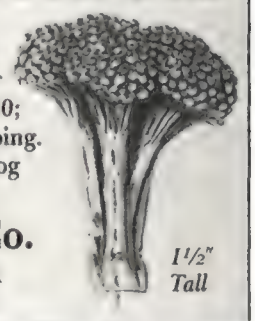

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There was a time when people thought me crazy. Not crazy bonkers, just crazy odd. I used to go out of my way to visit all the great stadiums of sport. When, for instance, SMITHSONIAN dispatched me to write about the Huntington Museum and Gardens near Los Angeles (SMITHSONIAN, February 1982), I made a detour to Chavez Ravine to see where the Dodgers play. Same with Yankee Stadium in the Bronx, the Vet in Philadelphia, Wrigley Field in Chicago. Not that there were games in progress; I just wanted to see the boxes they came in.

These were not mere "venues"—to adopt the halt and lame diction of sportscasting—of games and teams and players. No, these were great shrines, and my impulse to visit them was as sharp as the fervor that goaded any medieval pilgrim. I longed to sniff the residual neat's-foot oil and sweat, strain my ears for antique echoes and reverberations, and go all atingle at the miracles of grace and agility that actually took place there. The urge was to substantiate the messianic, to put my fingers—if not into the game's side, then into its oily glove.

Browsing in this fine volume is precisely like making that pilgrimage, a reverential trip to the contests of our

Gerald Garston's *Pastime* pays tribute to the "most American of pastimes."

youth. Come along with Robert Parker: "We turned into Yawkey Way [in Boston]. And there we were. In front of Fenway: outside the ballpark in the dwindling afternoon, the lights already on inside, tickets purchased, seats reserved, the ballgame in an hour. . . . Inside was eternity. Through the darkness under the stands and up and into the bright green park, bathed in light, changeless and symmetrical, contained, exact, and endlessly different, like water in a stream."

Changeless, exact, eternal. That's baseball, and that's why *Diamonds Are Forever* is such a perfect title for this assemblage of words and art prompted by this quintessentially American (and Japanese, and Canadian, and Latin American) game. The editors have brought together the words and pictures from an exhibition mounted by the New York State Museum and the Smithsonian Institution Traveling Exhibition Service. Here, 55 writers and 90 artists give their all for the home side. In every case, it's a pleasure to report they knock the ball out of the park. Kiss it goodbye.

Among the writers, it appears that baseball makes a poet of everybody who takes the time to look carefully, to participate fully in the game. John Updike, for example, points out how Ted Williams "struck the pose of Donatello's *David*," standing atop third base as if the bag were Goliath's head. And Michael Blumenthal sings of the "pilfered sanctity" he feels after stealing second, the "fierce legitimacy" of doing something that's frowned on in every other context save baseball.

Among the artists, familiarity breeds content, clearly, and baseball images and artifacts are mementos of a cosmic love affair between Man and this most gentle game. The fields *are* like green cashmere, the bases and home plate *are* as lapidary and marmoreal as the markers in any heroic cemetery. Here, the players are balletic in the field, but as curt and precise as they need be when it comes to laying ash on the ball.

I'm especially taken by the helicopter views of the game and its city by New Yorker Ralph Fasanella, and by Karl Wirsum's *Looking for a Curveball in Cuernavaca*, which properly puts the game in an Aztec ceremonial and ritual context. Mesoamericans would have appreciated this game, I expect, though a writer once likened the toughest job on Earth to "explaining the concept of

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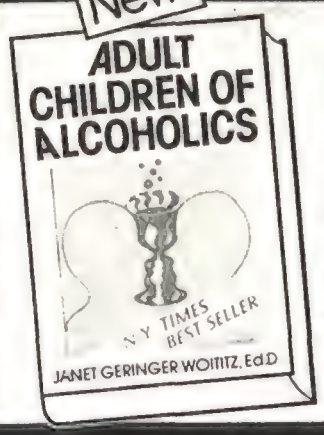

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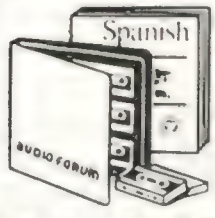

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baseball to a primitive man in an age just about to discover fire."

One unaccountable lapse in the text is the absence of the greatest baseball novel of all time, *Bang the Drum Slowly*, by Mark Harris. Here is Harris' narrator, himself a pitcher, explaining the intellectual tension of the game: "The man you are facing is not a golf ball sitting there waiting for you to bash him. He is a human being, and he is thinking, trying to see through your system and trying to hide his own. This is not golf, nor football . . . but human being against human being, and the [man] that wears his thinking hat has got the advantage over the other."

And here is the same fellow addressing the topic of confidence with an observation that has application far beyond sport: "But I always *looked* like I had it and *sounded* like I had it. . . . Crowd in and look fierce, and you will find it works wonders."

A smaller lapse is that there's so little from W. P. Kinsella's *Shoeless Joe*, a fantastic tale of an imaginary stadium in an Iowa cornfield, where all the great players of yesteryear meet in a sort of cosmic league. This is what Kinsella notes about the game: "The play reaffirms what I already know—that baseball is the most perfect of games, solid, true, pure and precious as diamonds. If only life were so simple. I have often thought, *If only there was a framework to life, rules to live by.* . . . Colors can change, lives can alter, anything is possible in this gentle, flawless, loving game."

So Kinsella and Harris and the editors of this volume are on to something. Because the great thing about sport in general, and baseball in particular, is that it allows you to play with immortality. Anything and everything can happen within the rules and playing field of the game. And when it's over, you start another game, whose result will be unaffected by the previous outcome.

And why do it? The definitive answer is pitched by the American poet William Carlos Williams, who like many a big leaguer, also strove to keep his delivery high, hard and inside:

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> and the escape, the error
> the flash of genius—
> all to no end save beauty
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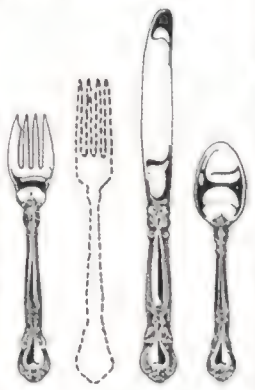

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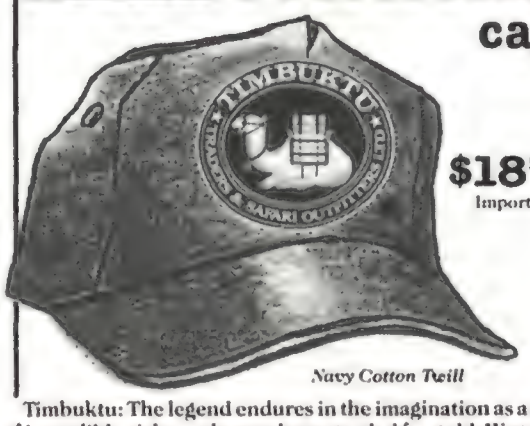

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Additional reading

Foxes (p. 32)

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Red Fox: The Catlike Canid by J. David Henry, Smithsonian Institution Press, 1986

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Supernova (p. 46)

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John Sloan by Lloyd Goodrich, Whitney Museum of American Art/ Macmillan, 1952

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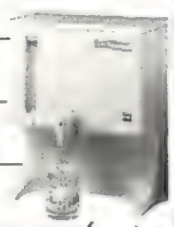

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Marbles (p. 94)

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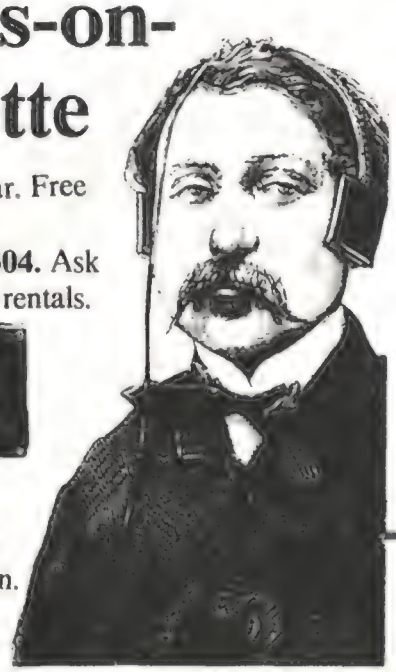

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Horizons: Paintings and Drawings by Robert Taylor (opens April 28) British aviation artist captures the role of Britain in the air war of World War II.

National Museum of Natural History
King Herod's Dream: Caesarea on the Sea (through June 19) More than 200 objects trace the archaeological and historical significance of Israel's renowned city from 22 B.C. to A.D. 1296.
Birds of the Pacific Slope: Paintings by Andrew Jackson Grayson (April 15-July 14) Watercolors by the "Audubon of the West," produced from 1865-1871.

National Museum of American History
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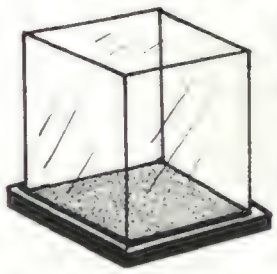

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The Artist's Mother: Portraits and Homages (through June 5) Works in varied media by some of the 20th century's most influential artists, including George Bellows, David Hockney and Marisol.

National Museum of American Art
Wanderlust (April 8-June 19) Diversity of life and landscape in foreign lands as seen by American photographers in 64 color and black-and-white prints.
City Life: Photographs by Bruce Davidson (through June 19).

Renwick Gallery
Clay Revisions: Plate, Cup, Vase (April 22-September 5) Three traditional ceramic shapes as they have been transformed into nonfunctional artworks by 26 artists.
American Art Pottery, 1880-1930, from the Cooper-Hewitt Museum (through October 23) Seventy-five pieces representing the historical and esthetic development of the American art pottery movement.

Arthur M. Sackler Gallery
Investigating Artistic Environments in the Ancient Near East (April 16; 8:45 A.M.-5 P.M.) A seminar by leading scholars in the field. Reservations required at (202) 357-4886.

Hirshhorn Museum & Sculpture Garden
Directions—Sherrie Levine (through May 30) Ready-made materials and patterns predominate in these paintings from two of artist's most recent series.
Kate Ericson and Mel Ziegler Works (through May 30) Site-specific temporary installation.

National Museum of African Art
Royal Benin Art in the Collection of the National Museum of African Art (runs indefinitely) Traditional court art.

Cooper-Hewitt Museum (New York)
The Art that is Life: The Arts and Crafts Movement in America, 1875-1920 (April 5-June 26) The impact of the design reform movement as a reaction to industrialization is explored.
The Triumph of Simplicity: 350 Years of Swedish Silver (through June 7) The art of Swedish silversmiths from the 17th century to the present.

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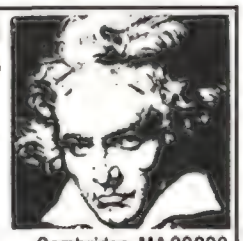

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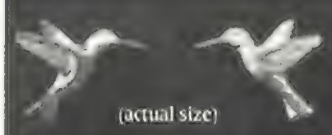

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1988 Washington Craft Show

The sixth annual Washington Craft Show will be held on April 22-24. See *Highlights continued* (p. 174).

Musical Weekend

Highlights of the 16th Musical Weekend, April 29, 30 and May 1, will include a performance by the National Symphony Orchestra with Mstislav Rostropovich; dinners at the Renwick Gallery and the new Quadrangle museum complex; and a champagne breakfast at the National Zoo. Write: Musical Weekend, NMAH Room 4124, Smithsonian Institution, Washington, D.C. 20560.

Lecture and Seminar Program

Smithsonian Research Expeditions, a stimulating new program, will begin in August. Associates can work and explore with Smithsonian scientists in field settings, laboratories and archives to collect, organize and interpret data. Their efforts will directly contribute to Smithsonian publications and exhibitions.

The first expeditions will include: excavation of an Early Man campsite in Colorado (August 1-14 or August 19-September 1); Idaho agriculture and rural lifeways (August 15-26); dynamics of an active volcano in Costa Rica (September 12-22); and Air and Space archival treasures at the National Air and Space Museum (July 31-August 22).

For more information on Smithsonian Research Expeditions, write to the Lecture and Seminar Program, 1100 Jefferson Drive, S.W., Room 3045, Washington, D.C. or call (202) 357-1350.

Smithsonian on the air

Radio Smithsonian: Features on this weekly half-hour series include a tenth anniversary salute to the Smithsonian's Discovery Theater for children, a musical look at an acquisition of 500 harmonicas and a nonmathematical description of Einstein's Theory of Relativity.
Here at the Smithsonian: Three-minute TV features on the 250-year story of the black church, a tour of a contemporary native American art exhibition, and a sobering look at the internment of Japanese-Americans during World War II.

To find out what stations in your area carry these programs, write: Office of Telecommunications, MAH Room BB40, Washington, D.C. 20560.

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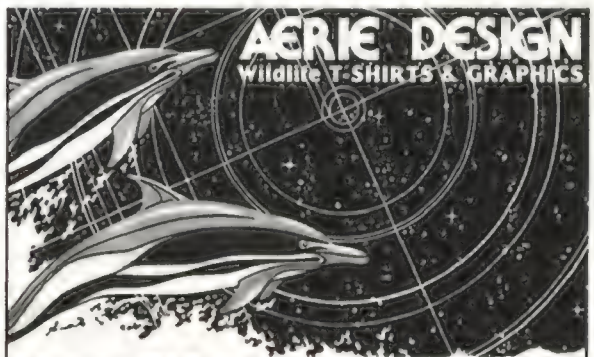

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Symposiums and Conferences

Women and the Constitution: 200 years (April 15-16) Special conference, cosponsored by the National Museum of American History and American University, explores women's relationship to the Constitution and the law, from the 18th century to the present. For details, write: Landmarks Program, Dept. of History, American University, Washington, D.C. 20016, or call (202) 885-2411.

Resident Associate Program

To become a Resident Associate, or for fee and ticket information, call 357-3030. Here are some April events:
Salute to Australian Cinema (April 5, 12, 19; 8 P.M.) Three cinematic gems.
What Is Creativity? (April 16; 10 A.M.-5:30 P.M.) Eminent artists, scientists and scholars reflect on nature of creativity.
Eartha Kitt in Concert (April 17; 6:30 P.M.) The one and only performs.

Exhibition catalogs

Catalogs available at this time include:
King Herod's Dream: Caesarea on the Sea (paper, $19.95; cloth, $29.95)
A Material World (paper, $5.95)
Wanderlust (paper, $14.95)

To order, send check or money order to Museum Shops, Box 44083, Washington, D.C. 20026-0083. Include 15 percent of total purchase to cover postage and handling (minimum, $1.75).

Smithsonian Institution Traveling Exhibition Service

SITES circulates exhibitions to cities throughout the United States and abroad. To sponsor a show in your community, write SITES, Smithsonian, Washington, D.C. 20560. April exhibits include:
Charleston, West Virginia (April 30-July 3) *Dutch Paintings of the Golden Age from the National Gallery of Ireland*, Sunrise Museums.
Fresno, California (April 16-May 15) *Field to Factory: Afro-American Migration, 1915-1940*, California State University.
Huntsville, Alabama (April 17-June 19) *Glamour and Allure: The Hollywood Portraits of George Hurrell*, Huntsville Museum of Art.
Hutchinson, Kansas (April 23-May 22) *What Style Is It?*, Reno County Historical Society.

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Remind you of yourself at leisure or someone else practiced in creative idleness?

Above, two three-toed tree sloths (say it five times fast) are supinely relaxed, not sinfully; for they must have sun to live. Get the 4-color poster image, 31" by 22", for $4.00 postpaid, of these lovable animals (from SMITHSONIAN, April 1987).

Write to:

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Smithsonian Seminars

Washington, D.C.
April 24-29
Combine a pleasure-filled visit to the nation's capital with stimulating seminars.

American Antique Furniture
Explore major 19th-century styles with historian and author Oscar Fitzgerald.

Printing from Nature
Learn the fine techniques of printing directly from plants and fish.

Photojournalism
Document Washington life under the expert guidance of Smithsonian photographers.

Adventures in Archaeology
Tour the exhibition "Caesarea on the Sea" and enjoy lectures by archaeologists.

Crosscurrents in European Art
Study 19th-century painting and sculpture with art historian William Kloss.

University of Southern Mississippi
Hattiesburg, May 17-20
Enjoy lectures, field trips and special evening events as you sample Southern hospitality in a college setting.

The Art and Craft of Creative Writing
Learn to write sparkling prose with Edwards Park, author of SMITHSONIAN's *Around the Mall and beyond.*

Southeastern Indian Archaeology
Discover this region's native populations as you explore early habitation sites.

Appalachian State University
Boone, North Carolina, June 20-25
Travel to the beautiful Blue Ridge Mountains for popular summer seminars.

Art and Social Trauma
Art historian William Kloss explores the relationship between art and social change.

Ancient Myths to Space-Age Facts
Trace the history of astronomy from ancient stargazing to the present during lectures and a visit to the Dark Sky Observatory.

Wildflowers and Native Plants
Hike along the scenic Grandfather Mountain Trail as you learn about Appalachia's diverse flora.

Write Smithsonian National Associates, 1100 Jefferson Drive SW, Washington, DC 20560 or call (202) 357-1350 for seminar brochures. For tours, see page 93.

Attention Associate Members:

Our meals are making history.

At The Associates Court in the Museum of Natural History, we've created a quality dining experience exclusively for Smithsonian Institution associate members. Enjoy Chef David D'Addurno's weekday lunch and dinner buffets from 11 a.m.–3 p.m. and weekend brunch buffet from 9:30 a.m.–3:30 p.m. Call 202-371-0727.

Now you can enjoy the tastes of The Associates Court at home:

Smithsonian Smothered Pork Chops

Ingredients

6	6–8 oz. loin cut pork chops (¾"–1" thick)
4	lg. onions cut in julienne strips
4 oz.	corn or sunflower seed oil
1 qt.	brown gravy mix
4 oz.	water
2 tbsp.	granular garlic (or 8 fresh cloves)

Fresh ground pepper; salt

Directions Heat oil in skillet. Sear pork chops on both sides until dark brown. Remove and place in baking pan. Brown onions in skillet. Add water and gravy. Bring to boil. Pour gravy over pork chops. Add garlic. Salt and pepper to taste. Bake at 350 degrees for 1 hr. until tender (meat should pull away from bone). Serves 6.

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Crafts that you cannot resist

"Arts and crafts" is a common phrase, but a clear distinction between art and craft no longer exists. Crafts have become acknowledged as art forms in their own right: the skill of a weaver or a potter is appreciated and the work they create is valued for its artistic merit.

The level of artistic skill represented in the 1988 Washington Craft Show is impressive. One hundred craft artists from 32 states were chosen by a jury panel to participate in this sixth annual event. The media they use range from glass and ceramics to fiber and leather, metal, paper and wood.

The Women's Committee of the Smithsonian Associates produces the show each year to provide money for research and education projects throughout the Institution. It is being held April 22-24 at the Departmental Auditorium, across Constitution Avenue from the National Museum of American History.

In conjunction with the show, the James Renwick Alliance will sponsor an all-day seminar on April 23 titled "Clay: An Ancient Art in its Modern Aesthetic" at the Renwick Gallery, where an exhibit entitled "Clay Revisions: Plate, Cup, Vase" opens April 22. "The Art that is Life: The Arts and Crafts Movement in America, 1875-1920" opens April 5 at the Cooper-Hewitt Museum in New York City.
Sally Scott Maran

Enamel gives color to an engraved fired vase by Raimundas Lapsys.

A foyer table by Laney Oxman was created out of clay on a wood form.

Deborah Pratt wove reed, copper wire and sea grass into a lidded basket.

Sara Hotchkiss wove "Blue Sunrise" of cotton fabric and perle cotton.

Erica Zap designed 24-inch neckpiece of 18-karat gold plate over brass.

Silk crepe de chine caftan by Harriet Berke contains wax-resist outlining.

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By Richard Wolkomir

A telling tale of entitlement, full of sound and fury

So far, I have only a working title for the book I want to write: *My Book*. But I do have a vision. On a bookstore shelf, between Shakespeare's collected works and Erma Bombeck's latest, *My Book* is being mobbed by urbane readers whacking one another with rolled-up copies of the *New York Times Book Review* as they jockey for the few remaining copies.

The vision is fine. What I need now is a socko title.

Titles, after all, are practically everything. Where would James Michener have been if he'd called that novel *Everything There Is To Know About the Sandwich Islands Since the Silurian Epoch*, instead of *Hawaii*? Not to mention Adolf Hitler, who originally had planned to call his magnum opus *Four and a Half Years of Struggle Against Lies, Stupidity and Cowardice*, until his sidekick and business manager, Max Amann, suggested *Mein Kampf*.

Thinking up titles is an art in itself, but we legions of would-be authors face another literary crisis: title depletion. Every year U.S. publishers alone churn out, and thus exhaust, 50,000 new titles. Heedless of the future, profligate successful authors the world over keep consuming a precious resource—book titles—as if there were no tomorrow, and that puts the rest of us off. And they have creamed off the best. Maybe I would have written *The Brothers Karamazov*, but some older guy got first dibs. We're left with orts, like *The Second Cousins Karamazov*.

Established scriveners seem to be driven into a titular corner, too. Titles used to have violins welling in them: *Gone with the Wind, To Kill a Mockingbird, After Many a Summer Dies the Swan*. In our age of deprivation even such skilled artisans as John Updike are driven to titles that can't carry a tune. *Bech: A Book*, for instance. Earlier titles had more lightning and smoke because writers often filched them from Shakespeare, Milton and the Bible, exploiting nearly every resounding phrase: *The Sun Also Rises*, for example, or *Look Homeward Angel*, not to mention *The Ides of March, Not Peace but a Sword*, and *Rosencrantz and Guildenstern Are Dead*.

When it comes to title-snitching, of course, taste, discernment and a literary education are all required. What if Faulkner had plundered an adjacent line from *Macbeth*, and instead of *The Sound and the Fury* had come up with *A Tale Told By an Idiot*? But we MTV-agers are culture shy and too busy keeping au courant to plow back through the classics. That's why our titles, like *Psychotic Reactions and Carburetor Dung*, evoke heavy-metal bands.

We need help. There's plenty of room for go-getting junior professors to earn tenure by pioneering "titleology," the analysis of book titles. Or some crasser effort that might be called *Title-taking, A User's Manual*.

Titleologists could examine, perhaps, why *The Romance of Leprosy* didn't become a best-seller, nor did its spiritual twin, *The Romance of the Fungus World*. Ditto for *Let's Make Some Undies*. Russell Ash and Brian Lake chose an equally direct name for their collection of odd titles, *Bizare Books*. It hasn't hit the best-seller lists, either. Utilitarian, plain-Jane titles may be bad box office. A recent work, *The Book of Golf Disasters*, seemed surefire to me, evoking as it does the medical profession's worst nightmare. But it never got off the tee, saleswise. Maybe it should have been called *Vanity Fairway*.

We need titleological help, if only, or perhaps especially, for addressing special audiences. Canadian novelist Margaret Atwood has noted that her compatriots, unsure of their literary heritage, stand in great need of titles. They have invented a parlor game: give famous titles a Canadian slant by adding the word "moose," as in *War and Moose, Our Mutual Moose, Of Moose and Men* or, my absolute favorite, a backwoods comedy in iambic pentameter called *The Taming of the Moose*.

A headstrong people, those Canadians!

The peculiar relationship between national character and titles that sell may have best been illustrated by Edwardian satirist Saki (H.H. Munro) in a piece called "Filboid Studge, the Story of a Mouse That Helped." In it a young, amateur ad writer saves a collapsing food company by giving the grim name of Filboid Studge to a new, crispy, crunchy breakfast cereal that hasn't been selling at all. His theory is that Britons like to believe they are doing a duty rather than taking their pleasure. Soon, in households all over the United Kingdom dispirited clerks hurrying from their breakfast tables hear the accusing cry, "You haven't eaten your Filboid Studge!" and promptly gobble it down by the ton.

In really glum and cynical moments I've been thinking of calling my book *Bill Cosby's Cat's Previous Life as Ghostwriter of the Hackensack Diet as Told to Shirley MacLaine By the Spirit of a Neanderthal Shaman*, but I'll bet it's already been done. I'm desperate. Not so desperate as Abbie Hoffman, who titled one of his literary outpourings *Steal This Book*, but pretty desperate.

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